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ARTICLES

THE CONSTITUTIONAL INTELLECTUAL PROPERTY POWER: PROGRESS OF USEFUL ARTS AND THE LEGAL PROTECTION OF SEMICONDUCTOR TECHNOLOGY

Kenneth J. Burchfiel*

The Semiconductor Chip Protection Act of 1984¹ established a new form of legal protection for the designs embodied in semiconductor chips, differing in significant respects from the protection for intellectual property earlier afforded under patent and copyright law. In creating a statutory alternative to copyright and patent protection, Congress defined an intermediate standard of creativity required for mask work registration, between the "originality" requirement for copyright registration² and the "novelty, utility and nonobviousness" standards for patentability.³ It requires not only that a mask work be "original,"⁴ but also that it not merely consist of designs that are "staple, commonplace, or familiar in the semiconductor industry, or variations of such designs, combined in a way that, considered as a whole, is not original."⁵

The Act provides a nonexclusive alternative to patent protection

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1. The Semiconductor Chip Act of Nov. 8, 1984, Pub. L. No. 98-620, § 302, 98 Stat. 3347, 17 U.S.C. §§ 901-914 (Supp. II 1984) [hereinafter "Chip Act" or "The Act"].

2. 17 U.S.C. § 102(a) (1982).

3. 35 U.S.C. §§ 101-103 (Supp. II 1984).

4. 17 U.S.C. § 902(b)(1) (Supp. II 1984).

5. *Id.* § 902(b)(2).

for semiconductor chips,⁶ recognized by Congress as patentable subject matter,⁷ but it explicitly establishes a lower standard for protection than the "nonobviousness" standard required to obtain a patent. This article considers whether Congress may except semiconductor chips from the general requirement that patentable articles be non-obvious, in view of Supreme Court precedent indicating that the nonobviousness requirement is constitutionally required for the issuance of a valid patent for the same subject matter.⁸

I. LEGAL PROTECTION OF SEMICONDUCTOR TECHNOLOGY BY THE CHIP ACT

Semiconductor chips consist of circuits formed on a wafer of pure semiconductor material (such as silicon) by impregnating or "doping" the silicon substrate. This creates regions of semiconductor material isolated by insulating material. The semiconducting regions attach to conductors to form electronic circuits that perform a desired function.⁹ Semiconductor chips typically consist of a sandwich of several layers, connected in a three-dimensional network, and can contain millions of individual semiconductor components in an area as small as one-quarter inch square.¹⁰

Masks are basic tools used in the manufacture of integrated circuits.¹¹ Conventionally, circuit elements have been fabricated on

6. See *infra* notes 34-40 and accompanying text.

7. See *infra* note 46.

8. See *infra* note 34.

9. For a general description of the manufacture of semiconductor chips, see, e.g., H.R. REP. NO. 781, 98th Cong., 2d Sess. at 11-14 [hereinafter House Report]; S. REP. NO. 98-425, 98th Cong., 2d Sess. at 2-4 [hereinafter Senate Report]; *Copyright Protection for Imprinted Design Patterns on Semiconductor Chips: Hearing Before the Subcomm. on Courts, Civil Liberties and the Admin. of Justice of the House Comm. on the Judiciary*, 96th Cong., 1st Sess. 28-31 (1979) (statement of L. Sevin, President, Mostek Corp.) [hereinafter 1979 Hearing]; *id.* at 53-54 (statement of J. Finch, National Semiconductor Corp.); *Copyright Protection for Semiconductor Chips: Hearings Before the Subcomm. on Courts, Civil Liberties and the Admin. of Justice of the House Comm. on the Judiciary*, 98th Cong., 1st Sess. 21-28 (1983) (statement of F. Dunlap, Jr., Corporate Counsel and Secretary, Intel Corp.) [hereinafter 1983 House Hearings]; and *The Semiconductor Protection Chip Act of 1983: Hearing on S. 1201 Before the Subcomm. on Patents, Copyrights, and Trademarks of the Senate Comm. on the Judiciary*, 98th Cong., 1st Sess. 36-39 (1983) (statement of D. Schrader, Associate Register of Copyrights for Legal Affairs) [hereinafter 1983 Senate Hearing].

10. See generally Newell, de Geus & Rohrer, *Design Automation for Integrated Circuits*, SCIENCE, Apr. 29, 1983, at 465, 466 [hereinafter *Design Automation*].

11. See 1979 Hearing, *supra* note 9, at 23 (statement of L. Sevin, President, Mostek Corp.). Other chip manufacturers stressed that there is no distinction in principle between masks and the tools used to fabricate any other manufactured product. See 1979 Hearing, *supra* note 9, at 75 (statement of R. Shapiro, General Counsel, General Instrument Corp.); 1979 Hearing, *supra* note 9, at 53-54 (statement of J. Finch, National Semiconductor Corp.).

semiconductor wafers using photolithographic techniques. Circuit patterns are applied to the substrate using a template or "mask" containing the image of the desired pattern of components for a single layer of the final chip.¹² The semiconductor chip structure is built up layer by layer, each layer requiring a separate mask.

Engineering the masks needed to produce a typical semiconductor chip may require the investment of thousands of man hours and several million dollars.¹³ The layout phase, in which the myriad individual components are exactly positioned by hand¹⁴ in the "topography" of a layer, is the most time consuming and error-prone stage of integrated circuit design,¹⁵ as well as the most expensive.¹⁶ The increasing complexity of chip design has been accompanied by "skyrocketing" design costs,¹⁷ and the Chip Act is properly considered as a congressional attempt primarily to protect this most costly phase of chip production.¹⁸

12. Described in detail in Oldham, *The Fabrication of Microelectronic Circuits*, SCI. AM., Sept. 1977, at 110 [hereinafter *Microelectronic Circuits*].

13. See House Report, *supra* note 9, at 2 (development costs of a single new chip can reach \$100 million); Senate Report, *supra* note 9, at 5.

14. The House Report based its economic analysis on hand layout performed by a design engineer, assuming that "trial and error is used to select the optimum layout" in a "time-consuming and extremely costly" process. House Report, *supra* note 9, at 12. While computer-assisted layout is possible in some circumstances, individual placement of circuit components by skilled layout engineers is still used in "custom-designed" chips because hand layout permits the greatest number of transistors to be placed in the smallest chip area. *Design Automation*, *supra* note 10, at 468. In addition to optimal speed and power, due to their small size manually designed chips have the advantage of high manufacturing yield. See *Microelectronic Circuits*, *supra* note 12, at 113.

15. See, e.g., *Design Automation*, *supra* note 10, at 468; House Report, *supra* note 9, at 12; 1979 Hearing, *supra* note 9, at 25 (statement of L. Sevin, President, Mostek Corp.).

16. See 1979 Hearing, *supra* note 9, at 26 (statement of L. Sevin, President, Mostek Corp.). Designing a chip can require hundreds of man-years and millions of dollars and is much more costly than the subsequent translation of a layout into working masks, which is routinely done using computers. After masks are produced, the fabrication of a chip can take only weeks and cost thousands of dollars. See *Design Automation*, *supra* note 10, at 465.

17. 1979 Hearing, *supra* note 9, at 40 (statement of A. Grove, President, Intel Corp.). The advantage of market lead time had been considered adequate to repay the relatively low development costs of the early 1970's, but the limited period of exclusivity available before copied products reached the market was increasingly regarded as insufficient to offset 1979 design costs, which had increased twenty-fold. 1979 Hearing, *supra* note 9, at 31-40. See also Kastenmeier & Remington, *The Semiconductor Chip Protection Act of 1984: A Swamp or Firm Ground?* 33 J. COPYRIGHT SOC'Y 110, 136-36 (1986) [hereinafter Kastenmeier]; but see 1979 Hearing, *supra* note 9, at 70 (statement of J. Finch, National Semiconductor Corp.); 1979 Hearing, *supra* note 9, at 75-76 (statement of R. Shapiro, General Counsel, General Instrument Corp.).

18. The House Report explains that the mask work protected by the Chip Act "essentially is the layout determination. . . ." House Report, *supra* note 9, at 13-14. It emphasizes that "[f]itting these transistors into that small space, placing them so that the resulting device

Design costs can be entirely eliminated by photographically copying and duplicating the layout of a chip on the market, a process requiring only a specimen chip, a camera capable of 400 times magnification and "a certain amount of patience."¹⁹ By avoiding the layout phase, it is possible to produce a semiconductor chip in as little as three months, at a cost of less than \$50,000.²⁰ Congressional condemnation of the exact photographic duplication of chip designs, denounced as "piracy," and viewed as "a devastating disincentive to innovating research and development,"²¹ was in large measure responsible for enactment of the Semiconductor Chip Protection Act. The basic purpose of the Act was to counter "the unfair competition of competing firms which do not bear the tremendous research and development costs" involved in chip design.²²

A. *The Semiconductor Chip Protection Act*²³

Congress sought to achieve this objective, not under existing patent and copyright law,²⁴ but by fashioning a *sui generis*

operates efficiently and economically, is a fine art and also a costly one. . . ." House Report, *supra* note 9, at 2.

19. 1983 Senate Hearing, *supra* note 9, at 78-79 (statement of C. Layton, Vice President of Operations, Intersil Corp.). See also Senate Report, *supra* note 9, at 4.

20. See, e.g., House Report, *supra* note 9, at 2; 1979 Hearing, *supra* note 9, at 27 (statement of L. Sevin, President, Mostek Corp.); cf. Senate Report, *supra* note 9, at 5 (copying cost estimated to be \$50,000 to \$100,000). These estimates of time and cost were widely accepted in Congress during debate of the 1984 Act. See 130 CONG. REC. H5494-96 (daily ed. June 11, 1983).

21. House Report, *supra* note 9, at 2-3; see also Senate Report, *supra* note 9, at 5.

22. House Report, *supra* note 9, at 3. The inability of United States chip designers to recover development costs because of foreign chip copying was repeatedly cited in debate as a reason for enacting chip protection legislation. See 130 CONG. REC. H5491-97 (daily ed. June 11, 1984) (House debate on H.R. 5525).

23. For a more general discussion of the Act, see D. LADD, D. LEIBOWITZ & B. JOSEPH, PROTECTION FOR SEMICONDUCTOR CHIP MASKS IN THE UNITED STATES, 8 IIC STUDIES (Munich, 1986) [hereinafter LADD]; Kastenmeier, *supra* note 17; Note, *Semiconductor Chip Protection: Changing Roles for Copyright and Competition*, 71 VA. L. REV. 249 (1985); Wilson & LaBarre, *The Semiconductor Chip Protection Act of 1984: A Preliminary Analysis*, 67 J. PAT. OFF. SOC'Y 57 (1985); 3 M. NIMMER, NIMMER ON COPYRIGHT ch. 18 (1985) [hereinafter 3 M. NIMMER].

24. The close relationship of the Chip Act to the Copyright Act of 1976, 17 U.S.C. §§ 101-810 (1982), is indicated both by numerous verbatim quotations from the parent statute, and by the extended legislative deliberation of copyright protection for semiconductor products. The original chip protection bill, H.R. 1007, 96th Cong., 1st Sess. (1979), would have provided copyright protection for photographic masks and imprinted patterns in chips as pictorial, graphic and sculptural works, their purely utilitarian function notwithstanding. The copyright model was followed in subsequent bills both in the House and Senate including H.R. 7207, 97th Cong., 2d Sess. (1982); S. 3117, 97th Cong., 2d Sess. (1982); H.R. 1028, 98th Cong., 1st Sess. (1983); and S. 1201, 98th Cong., 1st Sess. (1983).

statute²⁵ granting the owner of a "mask work"²⁶ the exclusive right to both reproduce the mask work in any fashion²⁷ and import or distribute a semiconductor chip product in which the mask work is embodied,²⁸ for a period of ten years from the date of registration or first commercial exploitation anywhere in the world, whichever is first.²⁹ Subject to this greatly shortened period of protection,³⁰ the Chip Act establishes exclusive rights of reproduction generally similar to those afforded by the Copyright Act.³¹ Apart from the short-

During its deliberations on H.R. 1028, the House subcommittee became convinced that extension of copyright protection would be "extremely unwise" because of its potential for confusion and distortion of the established body of copyright law. See 130 CONG. REC. H5492 (daily ed. June 11, 1984) (statement of Rep. Kastenmeier); House Report, *supra* note 9, at 7, 10. Consequently, the subcommittee substituted the sui generis approach of H.R. 5525, 98th Cong., 2d Sess. (1984), which was adopted by the full House. House Report, *supra* note 9, at 16-17.

When it became clear that the House would refuse to provide mask work protection under copyright law, the Senate agreed to the sui generis approach, substituting a compromise amendment substantially corresponding to H.R. 5525 for S. 1201. See 130 CONG. REC. S12923 (daily ed. Oct. 3, 1984) (statement of Sen. Mathias). The difference in approach was regarded as more of form than substance, since the essential provisions of both the House and Senate bills were similar. *Id.*; see also House Report, *supra* note 9, at 7-8.

The amendments to H.R. 5525 contained in the House-Senate compromise are discussed in the *Senate Explanatory Memorandum on the Mathias-Leahy Amendment to S. 1201*, 130 CONG. REC. S12916 (daily ed. Oct. 3, 1984) [hereinafter *Senate Explanatory Memorandum*] and the *House Explanatory Memorandum of the Senate Amendment to H.R. 6163, Title III, as Considered by the House of Representatives*, 130 CONG. REC. E4432 (daily ed. Oct. 10, 1984) [hereinafter *House Explanatory Memorandum*], which taken together constitute an "informal conference report" on the final language of the compromise version. *House Explanatory Memorandum*, 130 CONG. REC. at E4432. The compromise version was enacted as Title III of H.R. 6163, 98th Cong., 2d Sess. (1984), an omnibus intellectual property reform bill. A comprehensive discussion of the procedural history of the Act is provided in Kastenmeier, *supra* note 17, at 117-23.

25. The relative merits of copyright and sui generis protection are discussed in the House Report, *supra* note 9, at 5-11. The Senate reached opposite conclusions on the question of sui generis protection in its discussion of S. 1201, 98th Cong., 1st Sess. See Senate Report, *supra* note 9, at 12-14.

26. The definition of a "mask work" is narrowly drawn to the final chip topography, i.e., the images corresponding to the "predetermined, three-dimensional pattern" present in the layers of a semiconductor chip. 17 U.S.C. § 901(a)(2) (Supp. II 1984).

27. *Id.* § 905(1). The Act creates the exclusive right to reproduce a mask work in the form of a chip as well as masks or mask designs in the form of computer tapes or other embodiments. See House Report, *supra* note 9, at 20.

28. 17 U.S.C. § 905(2) (Supp. II 1984).

29. *Id.* § 904.

30. The copyright term is generally the lifetime of an author plus fifty years, 17 U.S.C. § 302(a) (1982), subject to a number of exceptions. *Id.* §§ 302(b)-305.

31. See House Report, *supra* note 9, at 20; 17 U.S.C. § 106 (1982). It is noteworthy that Congress did not include in the Chip Act a right corresponding to the exclusive right "to prepare derivative works based upon the copyrighted work" granted by 17 U.S.C. § 106(2) (1982), presumably due to the extensive reverse engineering exception included in the Chip Act. See *infra* note 32.

ened duration of protection, the exclusive rights provided by the Act are subject to significant limitations, permitting "reverse engineering" of protected chips³² and immunizing the "innocent" infringer,³³ both of which expressly depart from prevailing copyright standards.

Because semiconductor chips are patentable subject matter,³⁴ the Chip Act's sui generis form of protection necessarily overlaps the protection available for chips or mask works under the Patent Act.³⁵ However, the Chip Act does not merely duplicate patent protection³⁶ for these articles of manufacture. The coverage the Chip Act offers is limited by the statutory definition of a "mask work"³⁷ and the requirement of physical fixation of the mask work in a semiconductor chip product.³⁸ Other limitations include citizenship require-

32. In an important divergence from copyright law, the Chip Act provides that it is not an infringement of the rights conferred by the Act for "a person to reproduce the mask work solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques embodied in the mask work or the circuitry, logic flow, or organization of components used in the mask work." 17 U.S.C. § 906(a)(1) (Supp. II 1984). Furthermore, the Act permits a person who performs such an analysis of a mask work "to incorporate the results of such conduct in an original mask work which is made to be distributed." *Id.* § 906(a)(2).

33. *Id.* § 907(a) (Supp. II 1984).

34. As defined in 35 U.S.C. § 101 (1982), patentable subject matter includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." This section has been construed broadly to include "anything new under the sun that is made by man," *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980), and it is scarcely disputable that semiconductor chip products and mask works are included in the expansive statutory definition of "manufacture." See 1983 House Hearings, *supra* note 9, at 64 (statement of G. Mossinghoff, Commissioner of Patents and Trademarks).

35. 17 U.S.C. § 912(a) (Supp. II 1984) provides that nothing in the Chip Act shall affect any right or remedy under title 35, the codification of the Patent Act of 1952, as amended. The legislative history emphasizes that the Chip Act "has no preemptive or superseding effect upon other, more general legislation which may affect the semiconductor industry, e.g., unfair trade practice laws or patent laws." *Senate Explanatory Memorandum, supra* note 24, at S12918; *House Explanatory Memorandum, supra* note 24, at E4433.

36. The basic patent term is seventeen years from the issue date, 35 U.S.C. § 154 (1982), which may be extended in certain circumstances to "restore" time lost in regulatory review, e.g., of patented drugs. *Id.* §§ 155-156 (Supp. II 1984). The exclusive rights granted by the Chip Act are significantly more restricted than the exclusive right to "make, use or sell" a patented invention. 35 U.S.C. § 271(a) (1982). A patentee can sue users of a product made or sold by an infringer, unlike a mask work owner, who lacks the power to recover from persons who use a pirated chip, without copying, manufacturing or selling it, e.g., by using it in a factory as a part of a computerized machine. See House Report, *supra* note 9, at 21 n.40.

37. See *supra* note 26. While a patent can protect chip design at any level of abstraction, including logical function, electronic circuitry or general organization, protection under the Act extends only to definite physical configurations of metallic, insulating or semiconductor material, i.e., the layout or "topography" of the chip.

38. 17 U.S.C. §§ 901(a)(3), 902(a)(1) (Supp. II 1984). See House Report, *supra* note 9, at 16-17. No comparable requirement of an actual reduction to practice of an invention is imposed under patent law. See *Dolbear v. American Bell Tel. Co.*, 126 U.S. 1, 535-36 (1888); *Skil Corp. v. Lucerne Prods., Inc.*, 684 F.2d 346, 350 (6th Cir.), *cert. denied*, 459 U.S. 991

ments³⁹ and the express prohibition against protection for "ideas."⁴⁰

B. *The Originality Standard*

The Chip Act's most radical departure from established intellectual property law is its unprecedented allowance of exclusive rights in a utilitarian article⁴¹ that does not meet the standards of utility,⁴² novelty⁴³ and nonobviousness,⁴⁴ all of which are required for patentability.⁴⁵ Recognizing that mask works and chips require legal protection, but rejecting the patent model on the assumption that few, if any, mask works would satisfy the nonobviousness requirement,⁴⁶ Congress instead adopted the copyright standard,⁴⁷ expressly conditioning registration of a mask work upon the requirement that a mask work be "original."⁴⁸

(1982); *Standard Oil Co. (Indiana) v. Montedison, S.p.A.*, 664 F.2d 356, 362-63 (3d Cir. 1981), *cert. denied*, 456 U.S. 915 (1982).

39. 17 U.S.C. §§ 902(a), 914 (Supp. II 1984).

40. *Id.* § 902(c). This limitation is identical to that contained in the Copyright Act, 17 U.S.C. § 102(b) (1982), and reinforces the restriction of protectable subject matter to particular layout topography, rather than more abstract levels of chip design.

41. See *supra* note 11 and accompanying text. A principal reason for the enactment of sui generis chip protection legislation was the conviction in the House that copyright protection should not be extended to mask works, which are integral parts of a manufacturing process and are purely utilitarian objects. See House Report, *supra* note 9, at 3-4, 6, 8-9; 130 Cong. Rec. H5492 (daily ed. June 11, 1984) (statement of Rep. Kastenmeier). See generally Kastenmeier, *supra* note 17, at 118-22.

42. 35 U.S.C. § 101 (1982).

43. *Id.* §§ 101-102.

44. *Id.* § 103 (Supp. II 1984).

45. See *infra* notes 82-87 and accompanying text.

46. The House Report concludes that patent and copyright law offer little protection against misappropriation of layout designs:

Patent law can protect the basic electronic circuitry for new microprocessors or other new such products. But patent law does not protect the particular layouts and design work by the different chip manufacturers in adapting those electronic circuits for a particular industrial purpose, because the creativity involved does not rise to the inventive level required by the patent laws. Yet, it is those layouts and design works that consume the resources of the innovating firms and that are copied by free riders.

House Report, *supra* note 9, at 3 (citing 1983 House Hearings, *supra* note 9, at 17 (statement of G. Mossinghoff, Commissioner of Patents and Trademarks)). The Senate agreed that patent protection for chips is "neither adequate nor always appropriate" and that "[a]s a practical matter, the layout of a chip, as embodied in a mask, will rarely, if ever, satisfy this standard of invention. A chip may be the product of millions of dollars and thousands of hours effort, but it is the result of hard work, not 'invention.'" Senate Report, *supra* note 9, at 8 (quoting the unpublished statement of A. Miller, Professor of Law, Harvard University, 1983 Senate Hearing, *supra* note 9).

47. 17 U.S.C. § 102(a) (1982).

48. *Id.* § 902(b)(1) (Supp. II 1984).

The legislative history indicates that the originality requirement of section 902(b)(1) is to be construed in accordance with established copyright precedent.⁴⁹ The originality standard does not include requirements of novelty, ingenuity or aesthetic merit,⁵⁰ but instead requires only that the work for which registration is sought be original in the limited sense that it originates with its author and is not a copy of an existing work.⁵¹

In contrast to the basic patent standard,⁵² copyright originality does not require novelty, and an independently created work that exactly corresponds to a pre-existing work could be copyrighted, since it is not copied.⁵³ Furthermore, the prohibition against "copying" is a limited restriction, since even methodically exact copies, such as reproductions of art works in the public domain, are often copyrightable; in such cases the originality standard may be satisfied by a mere distinguishable variation from the original, such as an involuntary mistake in an effort to exactly duplicate the model.⁵⁴

49. As initially drafted, H.R. 5525, 98th Cong., 2d Sess. (1984), contained the definition that "a mask work is 'original' if it is the independent creation of an author who did not copy it from another source." *Id.* § 901(4). The House Report states that this section "adopts the essence of the customary copyright law concept of originality and applies it to mask works, to the extent it is appropriate and feasible to do so." House Report, *supra* note 9, at 17. The Senate-House compromise amendment deleted this provision, without explanation in either the House or Senate Explanatory Memorandum. In view of the detailed explanation of other less significant changes provided in the Explanatory Memoranda, it is likely that section 901(4) was viewed as superfluous, and that this amendment was not intended to modify the copyright standard carried over into the Chip Act. Professor Nimmer suggests that the section may have been deleted because of its reference to an "author," which is inconsistent with the sui generis nature of the Act. 3 M. NIMMER, *supra* note 23, 18.03[B] at 18-9, n.8.

50. H.R. REP. NO. 1476, 94th Cong., 2d Sess. 51 (1976). See *Schroeder v. William Morrow & Co.*, 566 F.2d 3, 5 (7th Cir. 1977); *Tennessee Fabricating Co. v. Moutrie Mfg. Co.*, 421 F.2d 279, 281 (5th Cir.), *cert. denied*, 398 U.S. 928 (1970); *Dan Kasoff, Inc. v. Novelty Jewelry Co.*, 309 F.2d 745, 746 (2d Cir. 1962); *Rushton v. Vitale*, 218 F.2d 434, 435 (2d Cir. 1955); *Jeweler's Circular Pub. Co. v. Keystone Pub. Co.*, 281 F. 83, 88 (2d Cir.), *cert. denied*, 259 U.S. 581 (1922).

51. See *Kamar Int'l, Inc. v. Russ Berrie & Co.*, 657 F.2d 1059, 1061 (9th Cir. 1981); *Sid & Marty Krofft Television v. McDonald's Corp.*, 562 F.2d 1157, 1163 n.5 (9th Cir. 1977); *Novelty Textile Mills v. Joan Fabrics Corp.*, 558 F.2d 1090, 1093 n.3 (2d Cir. 1977); *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 490 (2d Cir.) (en banc), *cert. denied*, 429 U.S. 857 (1976); *Puddu v. Buonamici Statuary, Inc.*, 450 F.2d 401, 402 (2d Cir. 1971); *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102-03 (2d Cir. 1951). See generally 1 M. NIMMER, NIMMER ON COPYRIGHT, 1.06[A], at 1-37 (1985) [hereinafter 1 M. NIMMER].

52. 35 U.S.C. §§ 101, 102 (1982).

53. See *Mazer v. Stein*, 347 U.S. 201, 217-18 (1954); *Imperial Homes Corp. v. Lamont*, 458 F.2d 895, 897 (5th Cir. 1972); *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 53-54 (2d Cir.), *cert. denied*, 298 U.S. 669 (1936); *Fred Fischer, Inc. v. Dillingham*, 298 F. 145, 150-51 (S.D.N.Y. 1924).

54. See, e.g., *Eden Toys, Inc. v. Florelee Undergarment Co.*, 697 F.2d 27, 34-35 (2d Cir. 1982); *Alfred Bell & Co.*, 191 F.2d at 105; *Gerlach-Barklow Co. v. Morris & Bendien*,

This minimal requirement⁵⁵ stems from the rule formulated by Justice Holmes in *Bleistein v. Donaldson Lithographing Co.*,⁵⁶ sustaining the copyrightability of circus advertising posters:

The copy is the personal reaction of an individual upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man's alone. That something he may copyright unless there is a restriction in the words of the act.⁵⁷

Construed according to copyright precedent, the originality standard of the Chip Act arguably imposes a very low threshold standard for mask work registration, requiring neither novelty nor significant intellectual effort. However, in denying protection to designs that are staple, commonplace or familiar in the semiconductor industry, or variations of such designs, combined in a way that, considered as a whole, are not original,⁵⁸ the Act imposes a further requirement for registration that is not found in the copyright statute. The legislative history indicates that

the Committee desired to prevent public domain material from being usurped and turned into proprietary rights. There is a fundamental congressional policy against "recapturing" works in the public domain; this legislation pays careful heed to that policy. Accordingly, section 902(b)(2) prevents mere staple and commonplace designs from being taken out of the public domain.⁵⁹

Inc., 23 F.2d 159, 161 (2d Cir. 1927); *Alva Studios v. Winninger*, 177 F. Supp. 265, 267 (S.D.N.Y. 1959). *But see* *Sherry Mfg. Co. v. Towel King of Florida, Inc.*, 753 F.2d 1565 (11th Cir. 1985); *Gracen v. Bradford Exchange*, 698 F.2d 300, 305 (7th Cir. 1983); *Durham Indus. v. Tomy Corp.*, 630 F.2d 905, 910 (2d Cir. 1980); *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 490 (2d Cir.) (*en banc*), *cert. denied*, 429 U.S. 857 (1976).

55. The threshold quantum of originality required to sustain a valid copyright has been variously described. *See, e.g., Durham Indus.*, 630 F.2d at 910 ("minimal"); *L. Batlin & Son*, 536 F.2d at 490 ("concededly . . . low"); *Puddu v. Buonamici Statuary, Inc.*, 450 F.2d 401, 402 (2d Cir. 1971) ("modest"); *Dan Kasoff*, 309 F.2d at 746 ("a faint trace"); *Peter Pan Fabrics, Inc. v. Dan River Mills*, 295 F. Supp. 1366, 1368 (S.D.N.Y.) ("very modest"), *aff'd per curiam*, 415 F.2d 1007 (2d Cir. 1969). *See generally* Olson, *Copyright Originality*, 48 Mo. L. REV. 29, 46-55 (1983); *Study No. 3, The Meaning of "Writings" in the Copyright Clause of the Constitution*, Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm. on the Judiciary, 86th Cong., 1st Sess. 93-101 (1960) [hereinafter *Writings*]; Dworkin, *Originality in the Law of Copyright*, 11 ASCAP COPYRIGHT L. SYMP. 60 (1962); and 1 M. NIMMER, *supra* note 51, 1.08[C][1].

56. 188 U.S. 249 (1903).

57. *Id.* at 250.

58. 17 U.S.C. § 902(b)(2) (Supp. II 1984).

59. House Report, *supra* note 9, at 19.

In accordance with the legislative purpose of withholding protection from works already in the public domain, registration of an exact duplication that is not copied from an extant mask work would presumably be "staple" and thus denied validity, even if original in the sense of copyright law. For this reason, section 902(b)(2) imposes a novelty requirement conceptually distinct from copyright originality.

The House Report also suggests a third requirement of "some minimum of creativity to qualify a mask work for protection under the Act."⁶⁰ While endorsing this suggestion, the later legislative history acknowledges that "it is impossible to quantify a creativity standard precisely and objectively." It explains that the purpose of section 902(b)(2) is

to weed out mere insubstantial or trivial variations on prior mask works and to allow protection of new mask works in the creation of which their owners have expended substantial toil and investment, and which contain more than insubstantial variations on the prior mask work art.⁶¹

Whether the Chip Act is viewed as incorporating or modifying the copyright originality requirement,⁶² there is clear evidence from both the originality standard imposed by the Act and its legislative history that "clearly a mask work need not meet the nonobviousness requirements of 35 U.S.C. section 103," the basic standard imposed under patent law.⁶³

II. THE PATENTABILITY STANDARD OF NONOBVIOUSNESS AS A STATUTORY AND CONSTITUTIONAL LIMITATION

Enactment of chip protection legislation was motivated by the dilemma that chip designs, although patentable subject matter, do

60. House Report, *supra* note 9, at 19.

61. *Senate Explanatory Memorandum*, *supra* note 24, at S12917. The "creativity" requirement in copyright law is derived from the constitutional requirement of a "writing," and is discussed *infra* notes 143-44 and 167.

62. Nimmer considers that section 902(b) does not constitute a departure from accepted copyright standards of originality. 3 M. NIMMER, *supra* note 23, 18.03[B], at 18-8 to 18-11. Ladd, on the other hand, concludes that whatever the creativity standard established by the Act, it would appear to fall somewhere between the patent standard of inventiveness and the copyright standard of originality. LADD, *supra* note 23, at 38. This view is shared by Wilson & LaBarre, *The Semiconductor Chip Protection Act of 1984: A Preliminary Analysis*, 67 J. PAT. OFF. SOC'Y 57, 78-79 (1985).

63. *Senate Explanatory Memorandum*, *supra* note 24, at S12917; House Report, *supra* note 9, at 19.

not generally meet the nonobviousness standard for patentability.⁶⁴ At the same time, purely utilitarian mask works were considered beyond the ambit of copyright protection.⁶⁵ To protect this most valuable and innovative form of intellectual property from "piracy" without disturbing the established foundations of copyright and patent law, Congress created the sui generis Chip Act model, which provided copyright-like protection for the first time to useful articles.⁶⁶ In establishing parallel protection under the Act for a very restricted class of patentable subject matter,⁶⁷ Congress provided more limited exclusive rights than afforded by either copyrights or patents. However, Congress made the exclusive rights much easier to obtain and enforce than under existing patent law.

Explaining that "balancing" of the public interest in free access to unpatented inventions with the mask innovator's need to recover development costs was necessary,⁶⁸ Congress struck this balance by limiting the scope of exclusive rights granted,⁶⁹ permitting extensive reverse engineering⁷⁰ and shortening the term of protection.⁷¹ The result was a restriction on exclusive rights in comparison with those available under a patent and copyright. However, the Act eliminates the patent requirements of nonobviousness⁷² and prior art examination,⁷³ providing unprecedented remedies⁷⁴ and enforcement advantages⁷⁵ in comparison with patent law.

64. See *supra* note 46.

65. See *infra* notes 129-31 and accompanying text.

66. See *supra* notes 24-25.

67. See *supra* notes 37-40 and accompanying text.

68. See House Report, *supra* note 9, at 4-5, 8-9. See generally Kastenmeier, *supra* note 17, at 115-17, 147-50.

69. See *supra* notes 36-37.

70. See *supra* note 32.

71. See *supra* notes 30 and 36.

72. See *supra* note 63 and accompanying text.

73. Under 35 U.S.C. § 131 (1982), examination of a patent application is required to ensure that formal disclosure requirements are met, and that the claimed invention is novel and nonobvious as compared to the prior art. Although the Chip Act refers to "examining" an application for mask work registration, 17 U.S.C. § 908(e) (Supp. II 1984), it is clear from the legislative history that the Copyright Office is not required to "examine" the application in the sense of evaluating the novelty, originality or creativity of a mask work in comparison with "prior art" mask works, in order to determine if the mask work meets the statutory standard of originality. See House Report, *supra* note 9, at 25; Senate Explanatory Memorandum, *supra* note 24, at S12917.

74. Remedies such as statutory damages, impounding of infringing products and equipment, and discretionary attorney's fees are unknown in patent enforcement. 17 U.S.C. § 911 (c), (e), (f).

75. The copyright infringement model is "carried forward" into the Chip Act by 17 U.S.C. § 910(a) (Supp. II 1984). See House Report, *supra* note 9, at 25-26. A prima facie

This article addresses the issue of whether Congress could strike such a balance consistent with article I, section 8, clause 8 of the Constitution,⁷⁶ which enumerates the basic legislative power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."⁷⁷ Although Congress considered its constitutional power to enact semiconductor protection legislation under the copyright⁷⁸ and commerce clauses,⁷⁹ the legislative history of the Chip Act fails to disclose similar congressional consideration of the patent power as construed by the courts.⁸⁰ This article addresses the question of whether the Constitution affirmatively requires a standard of nonobviousness or its equivalent as a threshold limitation for the grant of exclusive rights in a useful article.⁸¹

A. *The Statutory Standard of Nonobviousness*

To satisfy the statutory standard for patentability, an inven-

case of copyright infringement can be established by proof of access and substantial similarity to the copyrighted work, which shifts the burden of proof to the defendant to show independent derivation or to establish another defense. *See* 3 M. NIMMER, *supra* note 23, 13.01[B]. In conjunction with the presumption of registration validity, 17 U.S.C. § 908(f) (Supp. II 1984), the adoption of enforcement procedures from copyright law makes rights in a registered mask work significantly easier to enforce than corresponding patent rights. *See, e.g.*, 1979 Hearing, *supra* note 9, at 52, 54 (statement of J. Finch, National Semiconductor Corp.); 1979 Hearing, *supra* note 9, at 58 (statement of J. Early, Director of Research and Development, Fairchild Camera and Instrument Corp.); Note, *Semiconductor Chip Protection: Changing Roles for Copyright and Competition*, 71 VA. L. REV. 249, 293 n.275 (1985).

76. Article I, section 8, clause 8 of the U.S. Constitution will hereinafter be cited in its entirety as the "intellectual property clause."

77. U.S. CONST. art. I, § 8, cl. 8.

78. In distinction to "patent clause," the term "copyright clause" is used herein to refer to that portion of the intellectual property clause which provides Congress with the power "to promote the progress of science . . . by securing for limited times to authors . . . the exclusive right to their . . . writings. . . ." *See infra* note 96.

79. U.S. CONST. art. I, § 8, cl. 3.

80. The constitutional limitation of the patent power is acknowledged in the Senate Report, *supra* note 9, at 8, but Congress does not appear to have considered whether such an affirmative limitation would apply to the exercise of the copyright power or commerce power to protect a "useful discovery" such as a semiconductor chip or mask work. *See generally* Kastenmeier, *supra* note 17, at 113-17 (discussion of constitutional limitations without mention of affirmative threshold limit).

81. Apart from consideration of the scope of the copyright and commerce powers, legislative concern with possible constitutional infirmities focused on whether the Act impermissibly grants retroactive rights. *See* House Report, *supra* note 9, at 29-30; Senate Report, *supra* note 9, at 26-29. The present article does not address this question.

tion⁸² must be both new⁸³ and useful.⁸⁴ In addition, a useful invention that is novel in the sense that it is not identically described in a single effective prior art reference will be denied patentability "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."⁸⁵ The critical nonobviousness standard requires that in addition to novelty, a minimum or threshold difference exist between an invention for which a patent is sought and the prior art existing at the time the invention was made. The standard is the codification⁸⁶ of the doctrine of "patentable invention" judicially developed over the previous century.⁸⁷

Despite its seemingly subjective character, the nonobviousness requirement rests on an essentially objective comparison. The seminal decision in *Graham v. John Deere Co.*⁸⁸ establishes that in evaluating the obviousness of an invention,

the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. . . . Such secondary considerations as commercial

82. 35 U.S.C. § 101 (1982) defines an "invention" as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."

83. 35 U.S.C. § 101-102 (1982). See generally *Ralston Purina Co. v. Far-Mar Co.*, 772 F.2d 1570, 1574 (Fed. Cir. 1985); *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715-16 (Fed. Cir. 1984).

84. The utility requirement is expressed in 35 U.S.C. § 101 (1982), and has been judicially construed to require that an application as filed disclose a practical use for the invention claimed where a use for the invention would not be obvious. See *Brenner v. Manson*, 383 U.S. 519 (1966). When a properly claimed invention meets at least one stated objective, utility under 35 U.S.C. § 101 is clearly shown. See *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 958 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984).

85. 35 U.S.C. § 103 (Supp. II 1984). Section 103 provides that "[p]atentability shall not be negated by the manner in which the invention was made."

86. Although novelty and utility have been statutory requirements for patentability since the first United States patent act, Act of Apr. 10, 1790, ch. 7, 1 Stat. 109, the nonobviousness standard was first explicitly included as a statutory prerequisite in the comprehensive 1952 revision of the patent statute, Act of July 19, 1952, ch. 950, 66 Stat. 792, 798.

87. In *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), the Supreme Court concluded that section 103 did not establish a new standard of patentable invention, but was intended merely as a codification of the general condition of patentability formulated in *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851) and applied in the following century.

88. 383 U.S. at 1. The first three Supreme Court cases construing the 1952 patent act, *Graham*; *Calmar, Inc. v. Cook Chem. Co.*, 383 U.S. 1 (1966) (decided together with *Graham*); and *United States v. Adams*, 383 U.S. 39 (1966), collectively cited as the "trilogy," provide the most pertinent guidance from the Supreme Court to date in construing the nonobviousness requirement.

success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.⁸⁹

Resolution of the ultimate legal question of obviousness⁹⁰ requires consideration of the specific differences between the claimed invention and the closest prior art. While often elusive in application, the obviousness standard has the decided advantage of an objective, factual basis, separating the issue of patentability from more subjective considerations such as the intrinsic importance of the invention⁹¹ or the subjective state of mind of the inventor,⁹² which led to confused, if not oracular, interpretations of the "patentable invention standard."⁹³

B. The "Constitutional" Requirement

The constitutional basis for patent and copyright legislation has

89. *Graham*, 383 U.S. at 17-18 (citation omitted).

90. Obviousness is a question of law, and the underlying inquiries mandated by *Graham* are questions of fact. *Id.* at 17. See also *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535 (Fed. Cir. 1983).

91. See, e.g., *Great Atl. and Pac. Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147, 154 (1950) (Douglas, J., concurring) for an illustration of the application of a purely subjective nonstatutory standard, i.e., whether an invention is a "gadget" or makes "a distinctive contribution to scientific knowledge." *Id.*

92. See, e.g., *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) (invention to be patentable must evidence "the flash of creative genius"). At least one purpose in creating the statutory nonobviousness standard was to overrule this construction of the requirement for patent validity. See *Graham*, 383 U.S. at 15. The legislative history on this point is summarized in Note, *The Standard of Patentability—Judicial Interpretation of Section 103 of the Patent Act*, 63 COLUM. L. REV. 306, 310-12 (1963).

93. Judge Rich of the Court of Appeals for the Federal Circuit has described the vagaries of the "undefinable concept of 'invention'" and the improvement wrought by substituting the nonobviousness criterion, concluding "[t]here is a vast difference between basing a decision on exercise of the inventive or creative faculty, or genius, ingenuity, patentable novelty, flashes, surprises and excitement, on the one hand, and basing it on nonobviousness to one of ordinary skill in the art on the other." Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 406 (1960). See also Rich, *The Vague Concept of 'Invention' as Replaced by Section 103 of the 1952 Patent Act*, 8 IDEA 136 (1964); Rich, *Laying the Ghost of the 'Invention' Requirement*, 1 AM. PAT. L.A.Q.J. 26 (1972). See generally Note, *After Black Rock: New Tests of Patentability—The Old Tests of Invention*, 39 GEO. WASH. L. REV. 123 (1970); Balluff, *Do Recent Supreme Court Opinions Raise the Standard of Invention, and Are Lower Courts Misinterpreting Such Opinions?* 34 J. PAT. OFF. SOC'Y 847 (1952); Weklind, *No Valid Patents? U.S. Supreme Court Trends in Jungerson v. Ostby & Barton Company*, 31 J. PAT. OFF. SOC'Y 859 (1949); Dodds & Crotty, *The New Doctrinal Trend*, 30 J. PAT. OFF. SOC'Y 83 (1948).

traditionally been found in the intellectual property clause.⁹⁴ In *Graham*, the Supreme Court not only sustained the 1952 Patent Act revision as supported by the article I, section 8 grant of legislative power,⁹⁵ but it also indicated that the nonobviousness standard is sufficiently rigorous to satisfy an express constitutional limitation on the congressional power to grant exclusive patent rights.⁹⁶ Considering that the patent clause "is both a grant of power and a limitation"⁹⁷ the Court at first described the constitutional restraint in general terms:

The Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose. Nor may it enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby. Moreover, Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available. Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must "promote the Progress of . . . useful Arts." This is the *standard* expressed in the Constitution and it may not be ignored.⁹⁸

This explanation indicates that one constitutional limitation is the requirement of novelty, since inventions already in the public

94. See, e.g., *Brown v. Duchesne*, 60 U.S. (19 How.) 183, 195 (1857) (Congress presumed to enact patent and copyright legislation under the intellectual property clause unless it indicates otherwise); *Graham*, 383 U.S. at 5.

95. 383 U.S. at 17.

96. *Id.* at 5-6. In *Graham*, consideration of the constitutional issue was expressly limited to the patent portion of the intellectual property clause, i.e., that portion of article I, section 8, clause 8 of the U.S. Constitution which authorizes the Congress "to promote the progress of . . . useful arts, by securing for limited times to . . . inventors the exclusive right to their . . . discoveries. . . ." *Id.* at 5 n.1 [hereinafter "patent clause"]. The Court indicated that the patent clause appears in the Constitution "spliced together with the copyright provision, which we omit as not relevant here." *Id.* (citing H.R. REP. NO. 1923, 82d Cong., 2d Sess. 4 (1952)); R. DEWOLF, AN OUTLINE OF COPYRIGHT LAW 15 (1925). Thus the Court adopted the view that the intellectual property clause is a "balanced sentence" in which the patent power is intended to promote the progress of useful arts, and the copyright power is intended to promote the progress of science, as the authorities cited by the Court maintain. See generally Lutz, *Patents and Science - A Clarification of the Patent Clause of the United States Constitution*, 18 GEO. WASH. L. REV. 50 (1949); P. J. FEDERICO, COMMENTARY ON THE NEW PATENT ACT, 35 U.S.C.A. 1, 3 (1954); Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 394-97 (1960); cf. Fenning, *The Origin of the Patent and Copyright Clause of the Constitution*, 11 J. PAT. OFF. SOC'Y 438, 441-42 (1929) (drafts of intellectual property clause phrased in two sentences) [hereinafter Fenning].

97. *Graham*, 383 U.S. at 5.

98. *Id.* at 6.

domain may not be the subject of patents. Although the Court specifies no quantum of innovation, advancement or social benefit, evidently at least one of these factors must be present to some degree before the exclusive rights secured by a patent may be "enlarged."⁹⁹ The constitutional limit is further defined in terms of constitutional purpose. Patent legislation must promote the progress of the useful arts, by adding to the sum of useful knowledge, innovation or advancement.¹⁰⁰ The constitutional limits that this passage describes appear to be less stringent than the statutory limits currently in effect, since they relate to basic novelty, "advancement," which is not in itself sufficient for patentability under the patent statute,¹⁰¹ and to such nonspecific requirements as "adding to the sum of useful knowledge" or "social benefit."¹⁰² The foregoing description of the

99. The term is obscure. *Cf.* *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 423-24 (1908) (suggesting that the Constitution requires an absolute monopoly in the patent grant).

100. Assuming that the statement of constitutional purpose is not intended radically to alter the settled judicial interpretation of statutory patent law, the Court's reference to "advancement" must be regarded as generally synonymous with "progress of . . . useful arts" and not as imposing an independent constitutional requirement of an advance in the art for patentability. Since *Lowell v. Lewis*, 15 F. Cas. 1018 (C.C.D. Mass. 1817) (No. 8,568), it has been well settled that there is no requirement that an invention be an advance in the sense of being an improvement over the prior art. *See* *Evans v. Eaton*, 16 U.S. (3 Wheat.) 454, App. at 24 (1818). The loose suggestion in *Graham* that the Constitution imposes such an "advance" standard in addition to the statutory requirements has been rejected by the lower courts. *See* *Commissioner of Patents v. Deutsche Gold-und Silberscheideanstalt*, 397 F.2d 656, 666-67 (D.C. Cir. 1968). The suggestion has also been criticized by commentators. *See* Note, *The 1966 Patent Cases: Creation of a Constitutional Standard*, 54 GEO. L.J. 1320, 1336-37 (1966). Compare earlier expressions of this view in *In re Ratti*, 270 F.2d 810, 814-15 (C.C.P.A. 1959); *In re Dean*, 291 F.2d 947, 950 (C.C.P.A. 1961) and Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 394-402 (1960). The "advance" standard has been advocated by Lorenzo, *Advance in the Art: The Essential Criterion of Patentability*, 56 J. PAT. OFF. SOC'Y 195 (1974); Bailey, *A Proposal for: A Standard of Patentability; Consonant Statutory Changes; A Manual on Determination of Patentability*, 41 J. PAT. OFF. SOC'Y 192 (1959).

101. Indeed, all five of the inventions at issue in *Graham*, *Calmar, Inc. v. Cook Chemical Co.*, 383 U.S. 1 (1966), *United States v. Adams*, 383 U.S. 39 (1966), *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969), and *Great Atl. and Pac. Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147 (1950), were acknowledged by the lower courts to be "advances" in the sense of improvements over the prior art, although this in itself was held insufficient for patentability by the Supreme Court in four of the five instances. *See* Kimball, *An Analysis of Recent Supreme Court Assertions Regarding a Constitutional Standard of Invention*, 1 AM. PAT. L.A.Q.J. 204, 224-27 (1973). Under the "patentable invention" standard judicially imposed under earlier patent statutes, it was often held that more than general advancement or improvement was required to meet the requirement of "invention." *See, e.g.*, *Altoona Publix Theatres v. American Tri-Ergon Corp.*, 294 U.S. 477, 486 (1935); *Slawson v. Grand St. R.R.*, 107 U.S. 649, 653 (1883); *Pearce v. Mulford*, 102 U.S. 112, 118 (1880).

102. Like advancement, neither of these factors implies a minimum difference beyond novelty. Judge Rich has suggested that progress in the useful arts is actually made

constitutional standard, taken alone, is remarkably amorphous. It provides little indication of practical prohibitions or limits that restrict Congress in enacting intellectual property legislation.¹⁰³ The boundaries that the general constitutional limitation imposes are made even less clear by the Court's acknowledgement that Congress may select the policy that, in its judgment, best effects the constitutional aim, as with any other article I power.¹⁰⁴ Furthermore, the scope of congressional discretion includes the determination of conditions and tests for patentability.¹⁰⁵

One specific constitutional limitation that the Court envisions appears to be a minimum objective difference between an invention to be patented and the prior art, since the Court explains specifically in the context of the obviousness standard that "patent validity 'requires reference to a standard written into the Constitution.'"¹⁰⁶ This somewhat oblique reference to a constitutional requirement of a minimum difference between an invention and the prior art is reinforced by the Court's conclusion that the nonobviousness standard of section 103 "comports with the constitutional strictures."¹⁰⁷ Further indicating that it considers the Constitution to require such a threshold minimum difference, the Court supports Thomas Jefferson's views on the "general nature of the limited patent monopoly under the Constitution"¹⁰⁸ and his asserted "insistence upon a high level of patentability"¹⁰⁹ as one of the first administrators of the United

by the constant increment of improvements on what we already have, produced both by the expected skill of ordinary workers in the arts and by the unobvious developments which would not occur spontaneously from the application of such ordinary skill. . . . Progress in useful arts is made as well by what may be called enrichment as it is by improvement, by the duplication of means for doing any given job.

Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 399 (1960). Irrespective of obviousness, advances such as the radically improved bituminous pavement machine in *Anderson's-Black Rock*, 396 U.S. at 57, add to the sum of useful knowledge, and provide a social benefit.

103. See generally Kimball, *An Analysis of Recent Supreme Court Assertions Regarding a Constitutional Standard of Invention*, 1 AM. PAT. L.A.Q.J. 204, 226-27 (1973).

104. *Graham*, 383 U.S. at 6 (citing *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1 (1824)).

105. *Id.* (citing *McClurg v. Kingsland*, 42 U.S. (1 How.) 202 (1843)).

106. *Id.* (quoting the concurring opinion of Justice Douglas in *Great Atl. and Pac. Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147, 154 (1950)).

107. *Id.* at 17.

108. *Id.* at 7. The Court does not cite specific writings of Jefferson or any of his contemporaries which suggest that the patent clause of the United States Constitution was intended to impose an affirmative requirement akin to nonobviousness as a condition for patent validity. See *infra* notes 271-79 and accompanying text.

109. The Court states that "Jefferson did not believe in granting patents for small details, obvious improvements, or frivolous devices. His writings evidence his insistence upon a

States patent system.¹¹⁰

Despite its somewhat indirect discussion of the practical consequences of the constitutional limitation found in the patent clause, the Court in *Graham* most clearly indicates its intent to establish a constitutional requirement of a minimum difference from the prior art beyond mere novelty by espousing the constitutional theory expressed in the concurring opinion of Justices Douglas and Black in *Great Atlantic and Pacific Tea Co. v. Supermarket Equipment Co.*¹¹¹ The majority opinion in that case makes no reference to the Constitution in holding invalid a patent for an apparently simple mechanical combination¹¹² for want of "patentable invention."¹¹³ However, in a vitriolic attack on assertedly "incredible patents which the Patent Office has spawned,"¹¹⁴ the concurring opinion maintains that

every patent case involving validity presents a question which requires reference to a standard written into the Constitution. Article 1, Section 8 contains a grant to Congress of the power to permit patents to be issued. But unlike most of the specific powers which Congress is given that grant is qualified. The Congress does not have free reign, for example, to decide that patents should be easily or freely given. The Congress acts under

high level of patentability." *Graham*, 383 U.S. at 9, evidently adopting the view expressed in Federico, *Operation of the Patent Act of 1790*, 18 J. PAT. OFF. SOC'Y 237, 241 (1936).

110. Jefferson is thought to have personally reviewed each of the sixty-seven patents issued prior to December 31, 1793, when his three-and-one-half year term as Secretary of State ended. Fouts, *Jefferson the Inventor, and his Relation to the Patent System*, 4 J. PAT. OFF. SOC'Y 316, 331 (1922).

111. 340 U.S. 147, 154 (1950).

112. The Court construed the claims as relating to a supermarket cashier's counter equipped with a three-sided frame, or rack, with no top or bottom, which, when pushed or pulled, would move deposited groceries to the checking clerk and leave them there when the operation was repeated. The device was kept on the counter by guides. *Id.* at 149.

113. The opinion has been criticized not only for its suggestion that a different and more exacting standard of invention applies to a combination entirely of old elements, but also for the Delphic requirement imposed in such cases that "only when the whole in some way exceeds the sum of its parts is the accumulation of old devices patentable." *Id.* at 152. See, e.g., Rich, *Laying the Ghost of the 'Invention' Requirement*, 1 AM. PAT. L.A.Q.J. 26, 32-33 (1972); Note, *After Black Rock: New Tests of Patentability—The Old Tests of Invention*, 39 GEO. WASH. L. REV. 123, 132-35 (1970). Neither standard has withstood the test of subsequent judicial scrutiny, particularly in the Federal Circuit. See, e.g., Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548-49 (Fed. Cir. 1983) (rejecting the argument that combination patents are subject to a more exacting standard); Kansas Jack, Inc. v. Kuhn, 719 F.2d 1144, 1150 (Fed. Cir. 1983) (no requirement of synergism or new, unusual or surprising results for patentability). See generally Harris, *Prospects for Supreme Court Review of the Federal Circuit Standards for Obviousness of Inventions Combining Old Elements*, 68 J. PAT. OFF. SOC'Y 66 (1986).

114. *Great Atl. and Pac. Tea Co.*, 340 U.S. at 158.

the restraint imposed by the statement of purpose in Art. 1, § 8.¹¹⁵

According to this view, the intellectual property clause itself imposes a minimum requirement for "invention," beyond novelty and utility, and independent of any patent statute. The constitutional standard is asserted to require that in order to be patentable, an invention must "push back the frontiers of chemistry, physics, and the like" and "make a distinctive contribution to scientific knowledge."¹¹⁶

By favorably citing the *Great Atl. and Pac. Tea Co.* concurring opinion, and by repeating its suggestion that the Framers had a general antipathy toward monopoly,¹¹⁷ *Graham* clearly suggests that the Supreme Court considered a minimum difference between an invention and the prior art to be required not only by previous judicial construction of statutory patent law, but also by the Constitution.

Although the Court clearly rejects any reading of the intellectual property clause that would require an invention to advance the frontiers of natural science, *Graham* does not delineate a minimum threshold imposed by the Constitution. However, the Court's reference to the "general condition of patentability" formulated in *Hotchkiss v. Greenwood*¹¹⁸ as the "cornerstone of the judicial evolution suggested by Jefferson and left to the courts by Congress"¹¹⁹ suggests that the *Hotchkiss* test for distinguishing between new and useful innovations capable of sustaining a patent and those that are not, has been elevated to constitutional status.¹²⁰ In *Hotchkiss* the Supreme

115. *Id.* at 154.

116. *Id.* Evidently this view is based on a reading of the intellectual property clause which conceives the purpose of the patent power as "to promote the progress of science." Apart from the dubious merits of including the promotion of "science" in the patent portion of a "balanced" intellectual property clause, the concurring opinion of Justice Douglas has the distinction of fashioning an entirely unprecedented standard of patentability based on the evident misunderstanding of the term "science" as referring to modern natural sciences, to the exclusion of the "useful arts." See *supra* note 96. The outrage of the patent bar at this misstatement was typified by the comment that "[t]his was about as clearly wrong as a judicial opinion on an intricate matter can possibly be. It was based on a complete disregard for the constitutional promotion of the useful arts." Prager, *Standards of Patentable Invention from 1474 to 1952*, 20 U. CHI. L. REV. 69, 86 (1952).

117. The concurring opinion in *Great Atl. and Pac. Tea Co.* asserts that "[e]very patent is the grant of a privilege of exacting tolls from the public. The Framers plainly did not want those monopolies freely granted." 340 U.S. at 154. This opinion is echoed by the Court in *Graham*, 383 U.S. at 7.

118. 52 U.S. (11 How.) 248 (1851).

119. *Graham*, 383 U.S. at 11.

120. This assumption is widely shared by the commentators, both among supporters of the standard, see, e.g., Rosenblatt, *The Constitutional Standard for 'Ordinary Skill in the*

Court for the first time articulated that in order for an invention to be patentable, it must require more ingenuity and skill than that possessed by an ordinary mechanic acquainted with the business.¹²¹ The distinction *Hotchkiss* established between the work of a skilled mechanic and that of an inventor was the dominating factor used to determine patentability until the 1952 revision of the patent statute. Although the current statute phrases the pertinent inquiry in terms of "obviousness" rather than "invention," the basic approach of *Hotchkiss* has been adopted in section 103,¹²² which similarly requires a comparison between the subject matter of a patent and the prior art, with the objective difference being gauged by reference to one of ordinary skill in the pertinent art.

In opinions since *Graham*, the Supreme Court has repeated its assertion of a constitutional limitation grounded in the intellectual property clause, without materially clarifying the standard applied. In *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*,¹²³ the Court indicated that "the patent standard is basically constitutional," repeating the general language regarding a constitutional standard from *Graham*.¹²⁴ Satisfied with this reiteration, the Court proceeded to dispose of the case on the basis of the *Great Atl. and Pac. Tea Co.* test, disregarding the factual inquiries described in *Graham* as essential.¹²⁵

Art', 54 J. PAT. OFF. SOC'Y 435 (1972); Irons & Sears, *The Constitutional Standard of Invention—The Touchstone for Patent Reform*, 1973 UTAH L. REV. 653 (1973), and its critics. See, e.g., Seidel, *The Constitution and a Standard of Patentability*, 48 J. PAT. OFF. SOC'Y 5 (1966); Kimball, *An Analysis of Recent Supreme Court Assertions Regarding a Constitutional Standard of Invention*, 1 AM. PAT. L.A.Q.J. 204 (1973); Note, *The 1966 Patent Cases: Creation of a Constitutional Standard*, 54 GEO. L.J. 1320 (1966).

121. The patent at issue in *Hotchkiss* related to the mere substitution of clay or porcelain for wood or metal as materials for making doorknobs and was held invalid because of "an absence of that degree of skill and ingenuity which constitute essential elements of every invention." 52 U.S. (11 How.) at 267.

122. See *Graham*, 383 U.S. at 14-17.

123. 396 U.S. 57 (1969).

124. *Id.* at 61.

125. In reverting to the *Great Atl. and Pac. Tea Co.* test of whether a combination of known elements results "in an effect greater than the sum of the several effects taken separately," the Court found no "synergistic" result to be present. Further, the Court dismissed evidence of initial disbelief of experts, long-felt need, unsuccessful experimentation and commercial success, curtly stating that "those matters 'without invention will not make patentability.'" *Id.* at 61 (quoting *Great Atl. and Pac. Tea Co.*, 340 U.S. at 153). The reappearance of the "invention" specter, considered buried in *Graham*, was widely lamented. See Comment, *The Statutory Standard of Patentability: The Necessity for a Relative Standard Dependent Upon Factual Inquiries*, 12 B. C. IND. & COM. L. REV. 917 (1971); Note, *After Black Rock: New Tests of Patentability—The Old Tests of Invention*, 39 GEO. WASH. L. REV. 123 (1970). In *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976), the Court stated that "[i]t has long been

C. *The Constitutionality of the Chip Act Under the Graham Standard*

If, as suggested, the constitutional standard applied in *Graham* is the same minimum statutory standard of nonobviousness or "patentable invention" formerly applied under statutory patent law, then the constitutional standard for granting exclusive rights in a useful manufacture must require a considerably greater difference from the prior art than mere "originality." While the Supreme Court did not hold the nonobviousness standard itself to be the minimum required by the Constitution, it appears that the Court would have regarded any standard of difference that was considerably less rigorous than nonobviousness as violating the constitutional minimum standard. Both the monitory language with respect to the constitutional limitation and the characterization of the copyright clause as "not relevant" to the constitutional inquiry under patent law¹²⁶ support this conclusion.

Thus, *Graham* suggests that Congress must impose a minimum requirement of difference from the prior art at least approximately equivalent to nonobviousness in any statute extending exclusive rights to useful discoveries, if such legislation is to withstand constitutional scrutiny. Because the Semiconductor Chip Protection Act expressly eliminates any comparable minimum difference requirement,¹²⁷ it appears that the copyright standard of originality adopted in the Act violates the threshold constitutional requirement established by *Graham*, unless the Act can be sustained as an exercise of the copyright or commerce powers.¹²⁸

III. THE ALTERNATIVE CONSTITUTIONAL GRANTS OF POWER RELIED UPON BY CONGRESS

In accordance with the long evolution of the Chip Act, from a simple amendment of the copyright statute to sui generis protection adapting copyright principles, congressional consideration of the constitutional issue was largely concerned with precedent under copyright law. The basic constitutional question weighed by Congress

clear that the Constitution requires that there be some 'invention' to be entitled to patent protection," but disposed of the case by "scrutinizing" the combination patent at issue under the *Great Atl. and Pac. Tea Co.* standard. *Id.* at 281-83.

126. See *supra* note 96.

127. See *supra* note 63 and accompanying text.

128. It appears that a separate novelty requirement is established by 17 U.S.C. § 902(a)(2) (Supp. II 1984), and that at least this "constitutional" standard is satisfied by the Chip Act. See *supra* notes 59-60 and accompanying text.

was whether mask works and designs embodied in chips could be considered "writings" within the meaning of the copyright clause.¹²⁹ Doubt on this point was raised by opponents of the originally proposed amendment to the Copyright Act's definition of copyrightable subject matter, which included masks and chips. This was widely regarded as a "dramatic departure" from the settled precepts of copyright law,¹³⁰ particularly the historical denial of copyright to "utilitarian" articles.¹³¹

Although instructive, copyright principles developed under statutory law are not necessarily dispositive of the affirmative scope of power conferred by the copyright clause¹³² or the present constitutional issue.¹³³ In limiting the scope of statutory copyright protection to nonutilitarian works of authors, and narrowing the scope of registrable subject matter by specific statutory definitions, Congress acted with the express intent not to exhaust its constitutional powers in the 1976 Copyright Act.¹³⁴ In distinction to the copyright statute, the

129. See, e.g., Senate Report, *supra* note 9, at 12-13, 14-15; 1983 Senate Hearing, *supra* note 9, at 17, 21, 88, 97, 101, 105, 107; House Report, *supra* note 9, at 16 n.36; 1983 House Hearings, *supra* note 9, at 6-7, 11, 60, 81, 108-109, 124, 171, 298; *Senate Explanatory Memorandum*, *supra* note 24, at S12918; *House Explanatory Memorandum*, *supra* note 24, at E4433.

130. See 1983 Senate Hearing, *supra* note 9, at 19-28, 46, 49 (statement of D. Schrader, Associate Register of Copyrights for Legal Affairs); 1983 Senate Hearing, *supra* note 9, at 103 (statement of J. Baumgarten, Copyright Counsel to Association of American Publishers). See generally 1983 House Hearings, *supra* note 9, at 76-81, 107-20 (statement of D. Schrader); 1983 House Hearings, *supra* note 9, at 51-56, 60 (statement of L. Patterson, Professor of Law, Emory University); 1983 House Hearings, *supra* note 9, at 234, 235 (letter from R. Denicola, Professor of Law, University of Nebraska); 1983 House Hearings, *supra* note 9, at 295 (letter from A. Latman, Professor of Law, New York University); 1983 House Hearings, *supra* note 9, at 297, 298-99 (letter from J. Kidwell, Professor of Law, University of Wisconsin); Kastenmeier, *supra* note 17, at 118-19.

131. 1983 House Hearings, *supra* note 9, at 88-89 (statement of D. Schrader, Associate Register of Copyrights for Legal Affairs). The Copyright Act defines a "useful article" as "an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information." 17 U.S.C. § 101 (1982).

132. The copyright power is discussed in *Writings*, *supra* note 55; 1 M. NIMMER, *supra* note 51, 1.01-1.11; Note, *Constitutional Limits on Copyright Protection*, 68 HARV. L. REV. 517 (1955) [hereinafter Note, *Constitutional Limits*]; Richards, *The Value of the Copyright Clause in Construction of Copyright Law*, 2 HASTINGS CONST. L.Q. 221 (1975); Note, *Constitutional Limitations Upon the Congressional Power to Enact Copyright Legislation*, 1972 UTAH L. REV. 534 (1972).

133. Professor Nimmer, for instance, concludes that neither the absence of an exclusive right in copyright law nor the limitation of copyright protection to expressions is constitutionally required, and that Congress could grant exclusive use rights to ideas and titles under the copyright power. 1 M. NIMMER, *supra* note 51, at 1.08[D].

134. See H.R. REP. NO. 1476, 94th Cong., 2d Sess. 51 (1976). *Accord* Goldstein v. California, 412 U.S. 546, 567-68 (1973) (power not fully exercised under former provision providing copyright for "all the writings of an author").

copyright clause makes no express reference to utilitarian or nonutilitarian works. It requires only that a protected work be a "writing" and that it be the work of an "author." Although rarely interpreted by the courts, these terms

have not been construed in their narrow literal sense but, rather, with the reach necessary to reflect the broad scope of constitutional principles. While an "author" may be viewed as an individual who writes an original composition, the term, in its constitutional sense, has been construed to mean an "originator," "he to whom anything owes its origin." Similarly, although the word "writings" might be limited to script or printed material, it may be interpreted to include any physical rendering of the fruits of creative intellectual or aesthetic labor.¹³⁵

In accordance with this policy-oriented construction, the constitutional requirement of authorship has generally been regarded as principally requiring that copyrighted works be original,¹³⁶ i.e., those which are not copied from others, but which originate with the author.¹³⁷ The constitutional requirement does not appear to differ significantly from the statutory requirement of originality,¹³⁸ which has been applied in practice to impose only a minimal requirement

135. *Goldstein*, 412 U.S. at 561 (quoting *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884)). In *Mazer*, the Court assumed without deciding that the constitutional term "authors" includes the creator of a picture or a statue. *Mazer v. Stein*, 347 U.S. 201, 208 (1954).

136. See *Burrow-Giles*, 111 U.S. at 58, 60-61; *Sherry Mfg. Co. v. Towel King of Florida, Inc.*, 753 F.2d 1565, 1568 (11th Cir. 1985); *Miller v. Universal City Studios*, 650 F.2d 1365, 1368 (5th Cir. 1981); *Imperial Homes Corp. v. Lamont*, 458 F.2d 895, 897 (5th Cir. 1972); *Puddu v. Buonamici Statuary, Inc.*, 450 F.2d 401, 402 (2d Cir. 1971); *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102-03 (2d Cir. 1951); *Writings*, *supra* note 55, at 86. Professor Nimmer cautions that

It is important to distinguish between the requirement of originality and the requirement of intellectual labor. . . . The doctrine of originality stems from the Copyright Clause's use of the term "authors" and refers to independent creation. Intellectual labor, on the other hand, suggests an absolute standard, albeit a highly minimal one, of creativity.

1 M. NIMMER, *supra* note 51, 1.08[C][1], at 1-48.

137. See *supra* note 51.

138. The difference, if any, between the minimal constitutional requirement of originality and that imposed under statutory copyright law is insignificant, as indicated by cases construing the statutory requirement by the constitutional language. See, e.g., *Sherry Mfg. Co.*, 753 F.2d at 1568; *Durham Indus. v. Tomy Corp.*, 630 F.2d 905, 910 (2d Cir. 1980); *Kamar Int'l, Inc. v. Russ Berrie & Co.*, 657 F.2d 1059, 1061 (9th Cir. 1977); *Sid & Marty Krofft Television v. McDonald's Corp.*, 562 F.2d 1157, 1163 n.5 (9th Cir. 1977); *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 490 (2d Cir.) (*en banc*), *cert. denied*, 429 U.S. 857 (1976); *Alfred Bell & Co.*, 191 F.2d at 102-03; *Chamberlin v. Uris Sales Corp.*, 150 F.2d 512 (2d Cir. 1945).

for copyright validity.¹³⁹

The constitutional requirement of authorship was acknowledged but received little congressional scrutiny in the chip protection discussion.¹⁴⁰ Instead, congressional debate on the constitutionality of the Chip Act was almost entirely concerned with the question of whether mask works and semiconductor chip products could be considered constitutional "writings."¹⁴¹ The necessity of a writing¹⁴² has also been construed to impose a minimal standard,¹⁴³ requiring only physical fixation and a modicum of creativity.¹⁴⁴ In practice the constitutional term has proved capable of vast extension beyond its literal or eighteenth-century meaning, from the first United States act establishing copyright protection for any "map, chart, book or books"¹⁴⁵ to engravings, etchings and prints,¹⁴⁶ musical compositions and cuts,¹⁴⁷ public performance of dramatic compositions,¹⁴⁸ photographs and negatives,¹⁴⁹ paintings, drawings, chromos, statuettes, statuary, and models or designs intended as works of fine art,¹⁵⁰ compilations, periodicals, and works of art,¹⁵¹ motion pic-

139. See *supra* notes 50-57 and accompanying text.

140. The sole reference to "authors" contained in H.R. 5525, 98th Cong., 2d Sess. (1984), was deleted without comment in the Senate-House compromise amendment. See *supra* note 49.

141. See *supra* note 129.

142. The statutory and constitutional history of the term is discussed extensively in *Writings*, *supra* note 55.

143. See *Writings*, *supra* note 55, at 94-95; Note, *Copyright Protection for Mass-Produced, Commercial Products: A Review of the Developments Following Mazer v. Stein*, 38 U. CHI. L. REV. 807, 811-13 (1971); Dworkin, *Originality in the Law of Copyright*, 11 ASCAP COPYRIGHT SYMP. 60, 70-71 (1962); 1 M. NIMMER, *supra* note 51, 1.08[C] at 1-47.

144. The constitutional prerequisite of a "writing" requires that a modicum of creativity be present in a work to support copyright. See *Trade-Mark Cases*, 100 U.S. 82, 94 (1879); *Higgins v. Keuffel*, 140 U.S. 428, 431 (1891); *Bailie v. Fischer*, 258 F.2d 425 (D.C. Cir. 1958); *Gardenia Flowers, Inc. v. Joseph Markovits, Inc.*, 280 F. Supp. 776, 781 (S.D.N.Y. 1968). However, the quantum of creativity or intellectual labor required is very modest. See *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903); *Universal Athletic Sales Co. v. Salkeld*, 511 F.2d 904, 908 (3d Cir. 1975); *Tennessee Fabricating Co. v. Moultrie Mfg. Co.*, 421 F.2d 279, 281, 282 (5th Cir.), *cert. denied*, 398 U.S. 928 (1970); *Gelles-Widmer Co. v. Milton Bradley Co.*, 313 F.2d 143, 146-47 (7th Cir.), *cert. denied*, 373 U.S. 913 (1963); *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102-03 (2d Cir. 1951).

145. Act of May 31, 1790, ch. 15, § 1 Stat. 124. As has often been pointed out, the first copyright act arguably extended protection beyond the contemporary literal meaning of the term "writings" by including charts and maps.

146. Act of Apr. 29, 1802, ch. 36, 2 Stat. 171.

147. Act of Feb. 3, 1831, ch. 16, 4 Stat. 436.

148. Act of Aug. 18, 1856, ch. 169, 11 Stat. 138.

149. Act of Mar. 3, 1865, ch. 126, 13 Stat. 540.

150. Act of July 8, 1870, ch. 230, § 86, 16 Stat. 198, 212.

151. Act of Mar. 4, 1909, ch. 320, § 5, 35 Stat. 1075, 1076 (eliminating the previous "work of fine art" requirement).

tures,¹⁵² sound recordings,¹⁵³ and computer programs.¹⁵⁴ Since the decision in *Mazer v. Stein*,¹⁵⁵ holding that commercial use does not invalidate copyright registration, copyright has been sustained in such manufactures as eyeglass displays,¹⁵⁶ costume jewelry,¹⁵⁷ belt buckles,¹⁵⁸ ornamental pencil sharpeners,¹⁵⁹ toy dolls,¹⁶⁰ fabric designs,¹⁶¹ polyethylene lilacs,¹⁶² china designs,¹⁶³ Santa Clauses,¹⁶⁴ and "garish trinkets."¹⁶⁵

Surprisingly, in view of the progressive extension of copyright to ever-new classes of "writings," there is little Supreme Court precedent with respect to the potential limits of constitutional definition. Only once, in the *Trade-Mark Cases*,¹⁶⁶ has the Court held protected subject matter to exceed congressional power under the copyright clause,¹⁶⁷ and since the broad definition of "writings" provided

152. Act of Aug. 24, 1912, ch. 356, 37 Stat. 488.

153. Sound Recording Amendment of 1971, Pub. L. No. 92-140, 85 Stat. 391 (codified at 17 U.S.C. §§ 1, 5, 19-20, 26, 101(e) (1982)).

154. Act of Dec. 12, 1980, Pub. L. No. 96-517, § 10, 94 Stat. 3015, 3028 (codified at 17 U.S.C. §§ 101, 117 (1982)).

155. 347 U.S. 201 (1954).

156. *Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc.*, 95 F.R.D. 95 (D. Del 1982).

157. *See Herbert Rosenthal Jewelry Corp. v. Grossbardt*, 428 F.2d 551 (2d Cir. 1970); *Boucher v. Du Boyes, Inc.*, 253 F.2d 948, 949 (2d Cir.), *cert. denied*, 357 U.S. 936 (1958).

158. *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989 (2d Cir. 1980).

159. *Ted Arnold, Ltd. v. Silvercraft Co.*, 259 F. Supp. 733 (S.D.N.Y. 1966).

160. *See Original Appalachian Artworks, Inc. v. Toy Loft, Inc.*, 684 F.2d 821, 824 n.2 (11th Cir. 1982); *Kamar Int'l, Inc. v. Russ Berrie & Co.*, 657 F.2d 1059, 1061 (9th Cir. 1981); *Uneda Doll Co. v. Goldfarb Novelty Co.*, 373 F.2d 851 (2d Cir.), *cert. dismissed*, 389 U.S. 801 (1967); *Rushton v. Vitale*, 218 F.2d 434 (2d Cir. 1955).

161. *See Novelty Textile Mills v. Joan Fabrics Corp.*, 558 F.2d 1090 (2d Cir. 1977); *Millworth Converting Corp. v. Slifka*, 276 F.2d 443 (2d Cir. 1960); *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487 (2d Cir. 1960).

162. *Prestige Floral, S.A. v. California Artificial Flower Co.*, 201 F. Supp. 287, 290-91 (S.D.N.Y. 1962).

163. *Syracuse China Corp. v. Stanley Roberts, Inc.*, 180 F. Supp. 527 (S.D.N.Y. 1960).

164. *Doran v. Sunset House Distrib. Corp.*, 197 F. Supp. 940 (S.D. Cal. 1961), *aff'd*, 304 F.2d 251 (9th Cir. 1962).

165. *Dan Kasoff, Inc. v. Novelty Jewelry Co.*, 309 F.2d 745, 746 (2d Cir. 1962). *See generally* Note, *Copyright Protection for Mass-Produced, Commercial Products: A Review of the Developments Following Mazer v. Stein*, 38 U. CHI. L. REV. 807 (1971); Latman, *Fifteen Years After Mazer v. Stein: A Brief Perspective*, 16 BULL. COPYRIGHT SOC. 278 (1968-69); Reichman, *Design Protection in Domestic and Foreign Copyright Law: From the Berne Revision of 1948 to the Copyright Act of 1976*, 1983 DUKE L.J. 1143, 1227-38; Reichman, *Design Protection: A Comparative View*, 31 J. COPYRIGHT SOC. 267, 312-24, 352-58 (1983-84).

166. 100 U.S. 82 (1879).

167. The *Trade-Mark Cases* held that trademarks could not be protected as writings of authors because they were not "the fruits of intellectual labor." *Trade-Mark Cases*, 100 U.S. 82, 94 (1878). During the same term, the Court indicated that written materials used for the encouragement of "mere industry" or "mere advertisement" did not rise to the constitutional dignity of "science" required for copyright protection. *Baker v. Selden*, 101 U.S. 99, 105-06

in *Burrow-Giles Lithographic Co. v. Sarony*,¹⁶⁸ it has been settled law that the constitutional term is not limited to typography and chirography,¹⁶⁹ but also includes "any physical rendering of the fruits of creative intellectual or aesthetic labor."¹⁷⁰

The extremely modest threshold requirement of a "writing" should easily be satisfied both by mask works and chips, which are undoubtedly the "fruits of intellectual labor," determined by Congress to require intensive human effort and significant creative ability.¹⁷¹ No limit inherent in the constitutional definition requires the exclusion of mask works or chips from copyright protection, unless an affirmative proscription elsewhere in the Constitution applies to restrict the exercise of the copyright power.

Despite the broad construction of the term "writings," copyright protection has never been afforded to utilitarian articles that do not have separable artistic features.¹⁷² Since *Baker v. Selden*,¹⁷³ the courts have maintained a basic, if imprecise,¹⁷⁴ distinction between

(1880) (citing *Clayton v. Stone*, 5 F. Cas. 999 (C.C.S.D.N.Y. 1829) (No. 2,872)). This mischievous suggestion was followed in *Higgins v. Keuffel*, 140 U.S. 428 (1891), holding that writings intended for such noncreative purposes as labels or advertising were not protectable subject matter under the Copyright Act. *Id.* at 431. For a time it appeared as though a subjective criterion of artistic merit would be implied by the judiciary as a limitation on the copyright power. *See, e.g.*, *National Tel. News Co. v. Western Union Tel. Co.*, 119 F. 294, 297-98 (7th Cir. 1902); *J.L. Mott Iron Works v. Clow*, 82 F. 316 (7th Cir. 1897). However, the distinction between "artistic" or "scientific" endeavor and advertising was later abandoned in *Bleistein*, where any requirement of artistic merit or judicial competence to determine this elusive quality was repudiated. *Bleistein v. Donaldson Lithography Co.*, 188 U.S. 239, 251-52 (1903). *See Jeweler's Circular Pub. Co. v. Keystone Pub. Co.*, 281 F. 83, 87 (2d Cir.), *cert. denied*, 259 U.S. 581 (1922).

168. 111 U.S. 53 (1884).

169. *Mazer v. Stein*, 347 U.S. 201, 210 n.15 (1954).

170. *Goldstein v. California*, 412 U.S. 546, 561 (1973). *See generally Writings*, *supra* note 55, at 83.

171. *See House Report*, *supra* note 9, at 2, 12; *Senate Report*, *supra* note 9, at 8; *see generally Kastenmeier*, *supra* note 17, at 125. It is virtually certain that the level of creativity typically manifested in mask works is sufficient to satisfy any residual standard remaining after *Bleistein*, 188 U.S. at 251.

172. *See House Report*, *supra* note 9, at 8 ("fundamental principle" of copyright law); *Senate Report*, *supra* note 9, at 6-7, 12; 1983 *Senate Hearing*, *supra* note 9, at 21; 1983 *House Hearings*, *supra* note 9, at 109 (statements of D. Schrader, Associate Register of Copyrights for Legal Affairs); *House Hearings*, *supra* note 9, at 235 (letter from R. Denicola, Professor of Law, University of Nebraska); 1 M. NIMMER, *supra* note 51, at 2.08[D], 2.18.

173. 101 U.S. 99 (1880).

174. The Copyright Office had registered schematic diagrams, "mylar sheets," photolithographic masks and similar representations used in the manufacture of chips, despite questions of whether the masks, as opposed to paper or mylar layouts, convey information or are simply part of the manufacturing process. 1979 *Hearing*, *supra* note 9, at 6 (statement of J. Baumgarten, General Counsel, United States Copyright Office). *See also* 1983 *House Hearings*, *supra* note 9, at 87-88 (statement of D. Schrader, Associate Register of Copyrights for

patentable and copyrightable subject matter, largely based on criteria such as the utilitarian or non-utilitarian nature of the work,¹⁷⁵ its ability to convey information,¹⁷⁶ and the distinction between "expressions" and "ideas."¹⁷⁷ In introducing this dichotomy in *Baker*, the Court held that a copyright in a book describing an accounting system was limited to the explanation or expression describing the system and did not grant an exclusive right to its use.¹⁷⁸ The basis for the Court's holding was that granting copyright protection to an art or manufacture "when no examination of its novelty has ever been officially made, would be a surprise and a fraud upon the public. That is the province of letters-patent, not of copyright."¹⁷⁹

In referring broadly to general principles applicable not only to the bookkeeping system at issue, but also to such useful manufactures as medicines, ploughs, watches, churns, paints and dyes,¹⁸⁰ *Baker* suggested that the denial of copyright to any useful discovery might not only be a matter of statutory construction, but instead be

Legal Affairs).

175. Codified in 17 U.S.C. § 101 (1982). See cases cited *infra* note 182 and accompanying text.

176. Utilitarian articles are copyrightable if they "convey information." 17 U.S.C. § 101 (1982). See *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1250-52 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984) (computer object code); *United States v. Hamilton*, 583 F.2d 448 (9th Cir. 1978) (maps); *Schroeder v. William Morrow & Co.*, 566 F.2d 3 (7th Cir. 1977) (directory of nurseries); *Imperial Homes Corp. v. Lamont*, 458 F.2d 895 (5th Cir. 1972) (architectural plans); *Jeweler's Circular Pub. Co. v. Keystone Pub. Co.*, 281 F. 83 (2d Cir.), *cert. denied*, 259 U.S. 581 (1922) (directory of trademarks); *Reiss v. National Quotation Bureau*, 276 F. 717, 719 (S.D.N.Y. 1921) (compilation of meaningless code words).

177. Codified in 17 U.S.C. § 113(b) (1982). In copyright law, this doctrine has imposed two distinct limitations: first, a copyright protects the particular expression of an author but does not grant any exclusive rights in the underlying idea. See *Baker v. Selden*, 101 U.S. 99 (1880); *Miller v. Universal City Studios*, 650 F.2d 1365, 1368 (5th Cir. 1981); *Universal Athletic Sales Co. v. Salkeld*, 511 F.2d 904, 908 (3d Cir. 1975); *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931); and second, if an idea is essentially limited to but a few possible expressions, the expressions are not copyrightable. See *Apple Computer, Inc.*, 714 F.2d at 1252-53; *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 741-42 (9th Cir. 1971); *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967).

The distinction between idea and expression has endured as a basic tenet of copyright law. See *Mazer v. Stein*, 347 U.S. 201, 217 (1954); *Goldstein v. California*, 412 U.S. 546, 550, 571 (1973); *Durham Indus. v. Tomy Corp.*, 630 F.2d 905, 912 (2d Cir. 1980); *Sid & Marty Krofft Television v. McDonald's Corp.*, 562 F.2d 1157, 1163 (9th Cir. 1977); *Reyher v. Children's Television Workshop*, 533 F.2d 87, 90 (2d Cir.), *cert. denied*, 429 U.S. 980 (1976); Note, *Copyright Protection for Mass-Produced, Commercial Products: A Review of the Developments Following Mazer v. Stein*, 38 U. CHI. L. REV. 807, 809 (1971).

178. *Baker*, 101 U.S. at 101-02, 104.

179. *Id.* at 102.

180. *Id.* at 102-03.

required to prevent usurpation of a province reserved for patent protection:

The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. The object of the one is explanation; the object of the other is use. The former may be secured by copyright. The latter can only be secured, if it can be secured at all, by letters-patent.¹⁸¹

In the century since *Baker*, the courts often have reflexively adhered to the suggestion of a basic distinction between patentable and copyrightable subject matter,¹⁸² refusing to extend copyright protection to useful articles, which are considered more properly the subject of patent protection.¹⁸³

The chief obstacle to providing exclusive rights to mask works or chips under the copyright power is that masks are basic tools used in a manufacturing process¹⁸⁴ and chips are the products produced. Mask works and chips are solely utilitarian articles,

181. *Id.* at 105.

182. See *Carol Barnhart, Inc. v. Economy Cover Corp.*, 773 F.2d 411 (2d Cir. 1985) (mannequin); *Poe v. Missing Persons*, 745 F.2d 1238 (9th Cir. 1984) (arguably, a swimsuit); *Fabrica, Inc. v. El Dorado Corp.*, 697 F.2d 890 (9th Cir. 1983) (advertising display folder); *Norris Indus. v. International Tel. & Tel. Corp.*, 696 F.2d 918 (11th Cir.) (hub cap), *cert. denied*, 464 U.S. 818 (1983); *Scholz Homes, Inc. v. Maddox*, 379 F.2d 84, 85 (6th Cir. 1967) (buildings); *Imperial Homes Corp. v. Lamont*, 458 F.2d 895, 899 (5th Cir. 1972) (buildings); *Esquire, Inc. v. Ringer*, 591 F.2d 796 (D.C. Cir. 1978) (outdoor lighting fixture), *cert. denied*, 440 U.S. 908 (1979); *Durham Indus. v. Tomy Corp.*, 630 F.2d 905, 913, 914-15 (2d Cir. 1980) (mechanical features of toys); *Modern Aids, Inc. v. R.H. Macy & Co.*, 264 F.2d 93 (2d Cir. 1959) (*per curiam*) (massage machine); *Williams Electronics, Inc. v. Bally Mfg. Corp.*, 568 F. Supp. 1274, 1279-81 (N.D. Ill. 1983) (mechanical features of toys); *Russell v. Trimfit, Inc.*, 428 F. Supp. 91 (E.D. Pa. 1977) (stockings), *aff'd mem.*, 568 F.2d 770 (3d Cir. 1978); *SCOA Indus. v. Famolare, Inc.*, 192 U.S.P.Q. (BNA) 216 (S.D.N.Y. 1976) (shoe soles); *Vacheron & Constantin-Le Coultre Watches, Inc. v. Benrus Watch Co.*, 155 F. Supp. 932 (S.D.N.Y. 1957) (watch face), *aff'd in part, rev'd on other grounds*, 260 F.2d 637 (2d Cir. 1958); *Fulmer v. United States*, 103 F. Supp. 1021 (Ct. Cl. 1952) (parachute); *Muller v. Triborough Bridge Auth.*, 43 F. Supp. 298 (S.D.N.Y. 1942) (bridge approach); *Jack Adelman, Inc. v. Sonners & Gordon, Inc.*, 112 F. Supp. 187 (S.D.N.Y. 1934) (dress design); *Brown Instrument Co. v. Warner*, 161 F.2d 910 (D.C. Cir.) (blank charts), *cert. denied*, 332 U.S. 801 (1947); *Taylor Instrument Co. v. Fawley-Brost Co.*, 139 F.2d 98, 100 (7th Cir. 1943) (blank charts), *cert. denied*, 321 U.S. 785 (1944); *but cf. Harcourt, Brace & World, Inc. v. Graphic Controls Corp.*, 329 F. Supp. 517 (S.D.N.Y. 1971) (blank charts).

183. The distinction is criticized as illogical, although acknowledged as pervasive. See Goldstein, *Derivative Rights and Derivative Works*, 30 J. COPYRIGHT SOC. 209, 228-32 (1982-83).

184. See *supra* notes 11, 41 and accompanying text.

without separable artistic features,¹⁸⁵ by any test ever applied,¹⁸⁶ despite their complexity and the "artistry" required for their design.¹⁸⁷

Although *Baker* and its progeny have developed the law in a statutory rather than a constitutional context, they suggest a serious and unresolved question of whether a comparable constitutional limitation on the copyright power is necessary to preserve independent meaning in the patent clause. Such a structural limitation on the copyright power could be implied in several ways: (1) from the balanced sentence construction of the intellectual property clause,¹⁸⁸ (2) from the necessity of preventing the extinction of the patent clause¹⁸⁹ by erasing subject matter distinctions followed since the first patent and copyright acts,¹⁹⁰ (3) from the "basically different" constitutional standards assumed to exist for patent and copyright protection,¹⁹¹ or (4) from an assessment of the different economic consequences of traditional patent and copyright protection.¹⁹² The

185. In *Mazer*, the Court held that statuettes copyrightable as works of art did not lose their registrability when they were used in articles of manufacture as ornamental bases for electric table lamps. In holding that such commercial utility was not a bar to copyright protection, the Court observed that the verbal distinction between purely aesthetic articles and useful works of art ended with the 1909 Copyright Act. *Mazer v. Stein*, 347 U.S. 201, 211 (1954). However, since *Mazer* it has been held that the artistic features must be physically separable, see *Norris Indus.*, 696 F.2d at 924; *Esquire, Inc.*, 591 F.2d at 800-04; *Eltra Corp. v. Ringer*, 579 F.2d 294, 297 (4th Cir. 1978), or conceptually separable, see *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989, 994 (2d Cir. 1980), from functional elements to sustain copyrightability.

186. See House Report, *supra* note 9, at 4, 6, 9, 10; Senate Report, *supra* note 9, at 6; 1983 Senate Hearing, *supra* note 9, at 21; 1983 House Hearings, *supra* note 9, at 92 (statements of D. Schrader, Associate Register of Copyrights for Legal Affairs).

187. See *supra* note 18; 1983 Senate Hearing, *supra* note 9, at 87 (statement of A. Miller, Professor of Law, Harvard University) ("artistry" of chip design deserves protection); cf. 130 CONG. REC. H643 (daily ed. Feb. 24, 1983) (statement of Rep. Edwards) ("layouts and art works" pirated by "free riders").

188. See *supra* note 96; Note, *Constitutional Limits*, *supra* note 131, at 524-25.

189. See *Imperial Homes Corp. v. Lamont*, 458 F.2d 895, 899 (5th Cir. 1972) ("pre-emption" of patent law would occur if structure were protected by copyrighted architectural drawing); cf. *Brown v. Duchesne*, 60 U.S. (19 How.) 183, 195, 197 (1857) (patent power held domestic in character and necessarily confined within the limits of the United States, in order to prevent interference with the power to regulate commerce with foreign nations and the treaty-making power).

190. See *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 100-01 (2d Cir. 1951); *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 56-57 (1884).

191. See *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 490 (2d Cir.) (en banc), *cert. denied*, 429 U.S. 857 (1976); *Gelles-Widmer Co. v. Milton Bradley Co.*, 313 F.2d 143, 146 (7th Cir.), *cert. denied*, 373 U.S. 913 (1963); *Wihtol v. Wells*, 231 F.2d 550, 553 (7th Cir. 1956); *Alfred Bell & Co.*, 191 F.2d at 101-02; cf. *Graham v. John Deere Co.*, 383 U.S. 1, 5 n.1 (1966) (copyright clause "not relevant" to discussion of patent power).

192. See *Sony Corp. v. Universal City Studios*, 464 U.S. 417, 421 (1984); *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339, 345-46 (1908); *Mitchell Bros. Film Group v. Cinema Adult Theater*, 604 F.2d 852, 860 (5th Cir. 1979), *cert. denied*, 445 U.S. 917 (1980); *Imperial Homes Corp.*, 458 F.2d at 899; *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 741-42 (9th Cir. 1971); *Brown Instrument Co. v. Warner*, 161 F.2d 910, 911 (D.C. Cir.), *cert. denied*, 332 U.S. 801 (1947); House Report, *supra* note 9, at 8-9; 1983 House Hearings,

studied refusal of the courts to sustain copyrights in subject matter traditionally assigned to patent protection,¹⁹³ and the absence of significant historical overlap between the subject matter of copyrights and patents,¹⁹⁴ are sufficient to raise doubt on the constitutionality of legislation protecting either masks or chips under the copyright power.¹⁹⁵

In response to objections that statutory copyright was unsuited for protection of useful articles¹⁹⁶ and that copyright protection of mask works would distort traditional copyright concepts,¹⁹⁷ Congress adopted the sui generis model of the Chip Act.¹⁹⁸ Although it protected the conceptual purity of copyright law from distorting influences, casting the Chip Act in a freestanding chapter of Title 17 did not resolve all doubts as to the compatibility of copyright-like protection and utilitarian manufactures such as chips.¹⁹⁹ Uncertain that

supra note 9, at 235 (letter from R. Denicola, Professor of Law, University of Nebraska); 1983 House Hearings, *supra* note 9, at 299 (letter from J. Kidwell, Professor of Law, University of Wisconsin); 1983 Senate Hearing, *supra* note 9, at 90 (statement of A. Miller, Professor of Law, Harvard University). See generally Note, *Protection for the Artistic Aspects of Articles of Utility*, 72 HARV. L. REV. 1520, 1526-27, 1530 (1959).

193. See *supra* note 182 and accompanying text.

194. See *Taylor Instrument Co. v. Fawley-Brost Co.*, 139 F.2d 98 (7th Cir. 1943), *cert. denied*, 321 U.S. 785 (1944). The court stated that:

While it may be difficult to determine in which field protection must be sought, it is plain, so we think, that it must be in one or the other; it cannot be found in both. In other words, there is no overlapping territory, even though the line of separation may in some instances be difficult of exact ascertainment.

Id. at 99; see *Kline, Requiring an Election of Protection for Patentable/Copyrightable Computer Programs*, 67 J. PAT. OFF. SOC'Y 280 (1985). But see *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1251 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984).

195. Rep. Kastenmeier has urged that protection under the Chip Act extends only to mask works and not to "the actual chip itself." Consequently, the Act "does not create a shelter larger than the supporting walls of the Constitution. Any material that fails to qualify as a 'writing' does not receive protection under the Act." Kastenmeier, *supra* note 17, at 151. However, it is clear that the Act expressly grants exclusive rights to import or distribute chip products. 17 U.S.C. § 905(2) (Supp. II 1984). In addition, the exclusive right to "reproduce the mask work in any fashion" includes reproducing a chip "embodying" the mask work. See *supra* note 27; see generally House Report, *supra* note 9, at 16-17, 20. For this reason, it is unclear in what sense, if any, the Chip Act fails to protect "the actual chip itself." Protection of chips, as opposed to masks, was identified as a constitutional problem by Professor Kidwell. 1983 House Hearings, *supra* note 9, at 298-99 (Letter from J. Kidwell, Professor of Law, University of Wisconsin).

196. See *supra* notes 11, 41 and accompanying text.

197. See *supra* notes 24, 130-31; see generally Kastenmeier, *supra* note 17, at 138-40.

198. See House Report, *supra* note 9, at 5-11. For a legislative history, see *supra* notes 24-25.

199. These objections were not overcome by the sui generis solution, which has been described as "copyright protection masquerading as sui generis law" that fails to provide a suitable legal framework for the protection of useful articles such as chips. Note, *Semiconduc-*

mask works and semiconductor chip products as defined in the Act would be considered "writings" within the meaning of the copyright clause,²⁰⁰ the Senate invoked the commerce power by adding the limitation that only "conduct in or affecting commerce" would constitute actionable infringement.²⁰¹

A. *The Scope of Legislative Power Under the Commerce Clause*

To overcome any constitutional doubt as to the affirmative copyright power, Congress called upon its power "to regulate commerce with foreign nations, and among the several states, and with the Indian tribes."²⁰² The Senate Report explains that this limitation was included with the intention of providing additional constitutional support for the Chip Act, likening its reliance on two constitutional powers to "using a belt and suspenders to protect [a copyrighted] work."²⁰³

Congress' prudence in invoking the power to regulate commerce can scarcely be doubted in view of the extremely broad scope of commerce power legislation upheld by the Supreme Court.²⁰⁴ The commerce power has been considered sufficient to sustain not only laws

tor Chip Protection: Changing Roles for Copyright and Competition, 71 VA. L. REV. 249, 286, 292-95 (1985). Professor Kidwell theorized that in extending protection beyond mask works themselves, Congress intended to make the rights in mask works "functionally as deep as the rights available under the patent statute" while avoiding the novelty and nonobviousness requirements, which he considered "bad policy." 1983 House Hearings, *supra* note 9, at 299 (letter from J. Kidwell, Professor of Law, University of Wisconsin). See also 1983 House Hearings, *supra* note 9, at 171 (statement of D. Schrader, Associate Register of Copyrights for Legal Affairs) (sui generis approach "finesses" constitutional problems).

200. The House addressed and affirmatively resolved the issue of whether chips could be protected as "writings." House Report, *supra* note 9, at 16 n.36. The Senate further defined a chip as a product "that is a writing, or the manufacture, use, or distribution of which is in or affects commerce." S. 1201, 98th Cong., 1st Sess. § 2 (1983).

201. 17 U.S.C. § 910(a) (Supp. II 1984).

202. U.S. CONST. art. I, § 8, cl. 3.

203. Senate Report, *supra* note 9, at 15 (quoting 1983 Senate Hearing, *supra* note 9, at 91 (statement of A. Miller, Professor of Law, Harvard University)). The Senate Report indicates that "primary reliance" is placed on the copyright clause, but that the commerce power is also relied upon to obviate "any possible problems or speculations regarding legislative power, such as those found in *The Trademark Cases*, 100 U.S. 82 (1878)." Senate Report, *supra* note 9, at 14-15; see *Senate Explanatory Memorandum*, *supra* note 24, at S12918.

204. Outside the context of the tenth amendment and its restriction of the federal power to regulate state governments, this topic has not been extensively treated by commentators. See Note, *Constitutional Limitation of Congressional Commerce Clause Power*, 58 CHI.-KENT L. REV. 109 (1981); Bogen, *The Hunting of the Shark: An Inquiry Into the Limits of Congressional Power Under the Commerce Clause*, 8 WAKE FOREST L. REV. 187 (1972); Light, *The Federal Commerce Power*, 49 VA. L. REV. 717 (1963).

regulating navigation,²⁰⁵ transportation of goods in commerce,²⁰⁶ and market or commercial transactions,²⁰⁷ but also to provide a basis for public health,²⁰⁸ social welfare,²⁰⁹ labor²¹⁰ and civil rights²¹¹ measures. The power is so all-encompassing as to extend to such local crimes as loan sharking,²¹² to the local noncommercial production of

205. See *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1 (1824). In *Gibbons*, the Court held that the commerce clause provides the federal government with the authority to regulate navigation on the waters of the United States, and dissolved an injunction issued by the New York courts forbidding the operation in New York waters of steamboats licensed by the federal government to carry on the coasting trade. *Id.* at 239-40.

206. See, e.g., *Houston, E. & W. Texas Ry. v. United States*, 234 U.S. 342 (1914) ("Shreveport Rate Case") (federal regulation of intrastate rail rates pursuant to Interstate Commerce Act of 1887, ch. 104, § 3, 24 Stat. 379, 380); *Southern Ry. v. United States*, 222 U.S. 20 (1911) (railroad safety equipment in intrastate traffic required by Safety Appliance Act of 1893, ch. 196, 27 Stat. 531, amended by Act of Mar. 2, 1903, ch. 976, 32 Stat. 943 (codified as amended at 45 U.S.C. §§ 8-10 (1982))); *Baltimore & Ohio R.R. v. I.C.C.*, 221 U.S. 612 (1911) (maximum work hour regulations for railroad workers in interstate commerce under Act of Mar. 4, 1907, ch. 2939, 34 Stat. 1415 (codified as amended at 45 U.S.C. §§ 61-64 (1982))).

207. See, e.g., *United States v. Wrightwood Dairy Co.*, 315 U.S. 110 (1942) (minimum milk price requirements under Agricultural Marketing Agreement Act of 1937, ch. 296, 50 Stat. 246 (codified as amended in scattered sections of 7 U.S.C. (1982))); *Board of Trade v. Olsen*, 262 U.S. 1 (1923) (regulation of grain exchanges under Grain Futures Act of 1922, ch. 369, 42 Stat. 998 (current version at 7 U.S.C. §§ 1-17 (1982))); *Stafford v. Wallace*, 258 U.S. 495 (1922) (regulation of stockyard charges under Packers and Stockyards Act of 1921, ch. 64, 42 Stat. 159 (current version at 7 U.S.C. §§ 181-229 (1982))); *Loewe v. Lawlor*, 208 U.S. 274 (1908) (application of Sherman Act of 1890, ch. 647, 26 Stat. 209 (current version at 15 U.S.C. §§ 1-7 (1982) to commercial boycott); *Swift & Co. v. United States*, 196 U.S. 375 (1905) (application of Sherman Act to price-fixing in livestock markets); *Northern Sec. Co. v. United States*, 193 U.S. 197 (1904) (prohibition of stock pooling arrangement under Sherman Act).

208. See *United States v. Carolene Prods. Co.*, 304 U.S. 144 (1938) (Filled Milk Act of 1923, ch. 262, 42 Stat. 1486 (current version at 21 U.S.C. §§ 61-63 (1982))); *Weeks v. United States*, 245 U.S. 618 (1918) (mislabeling provisions of Pure Food and Drug Act of 1906, ch. 3915, 34 Stat. 768); *Hipolite Egg Co. v. United States*, 220 U.S. 45 (1911) (adulteration provisions of Pure Food and Drug Act of 1906).

209. See *United States v. Darby*, 312 U.S. 100 (1941) (minimum wage and maximum hour provisions of Fair Labor Standards Act of 1938, ch. 676, 52 Stat. 1060, as amended 29 U.S.C.A. §§ 201-219 (Supp. 1986)).

210. See *NLRB v. Jones & Laughlin Steel Corp.*, 301 U.S. 1 (1937) (National Labor Relations Act of 1935, ch. 372, 49 Stat. 449, as amended 29 U.S.C. §§ 151-168 (Supp. II 1984)).

211. See *EEOC v. Wyoming*, 460 U.S. 226 (1983) (Age Discrimination in Employment Act of 1967, 29 U.S.C. §§ 621-634 (Supp. II 1984), as applied to state government officials by Act of Apr. 8, 1974, Pub. L. No. 93-259, § 28(a)(2), 88 Stat. 55, 74 (codified as amended in 29 U.S.C. § 630(b) (1982))); *Katzenbach v. McClung*, 379 U.S. 294 (1964) (public accommodations provisions of Title II of Civil Rights Act of 1964, 42 U.S.C. § 2000a (1982) as applied to restaurant); *Heart of Atlanta Motel v. United States*, 379 U.S. 241 (1964) (public accommodations provisions of Title II of Civil Rights Act of 1964, as applied to motel).

212. See *Perez v. United States*, 402 U.S. 146 (1971) (loan-sharking provisions of Title II of Consumer Credit Protection Act of 1968, 18 U.S.C. §§ 891-896 (1982)).

grain for personal consumption,²¹³ and to the regulation of private morality, both in its commercial²¹⁴ and noncommercial aspects.²¹⁵

As originally construed by Chief Justice John Marshall, in a definition often since confirmed,²¹⁶ the commerce power,

like all others vested in congress, is complete in itself, may be exercised to its utmost extent, and acknowledges no limitations, other [sic] than are prescribed in the constitution. . . . If, as has always been understood, the sovereignty of congress, though limited to specified objects, is plenary as to those objects, the power over commerce with foreign nations, and among the several states, is vested in congress as absolutely as it would be in a single government, having in its constitution the same restrictions on the exercise of the power as are found in the constitution of the United States.²¹⁷

Furthermore, the wisdom of Congress in deciding what measures are necessary or appropriate to carry out the regulation of commerce is not subject to significant judicial review.²¹⁸ At least in the last half century, the Supreme Court has adhered to Chief Justice Marshall's view that the effective limitation on congressional ex-

213. See *Wickard v. Filburn*, 317 U.S. 111 (1942) (wheat acreage allotment applicable to production not intended in any part for commerce but wholly for consumption on the farm sustained under Agricultural Adjustment Act of 1938, ch. 30, 52 Stat. 31, as amended by Act of May 26, 1941, ch. 133, 55 Stat. 203 (current version at 7 U.S.C. §§ 1330, 1340 (1982))).

214. See *Weber v. Freed*, 239 U.S. 325 (1915) (prohibition of importation of films of prize fights for public exhibition under Act of July 31, 1912, ch. 263, § 1, 37 Stat. 240); *Hoke v. United States*, 227 U.S. 308 (1913) (conviction for transportation of women for purposes of prostitution under the White Slave Act of 1910, ch. 395, 36 Stat. 825); *Champion v. Ames*, 188 U.S. 321 (1903) (prohibition of importation or transportation of lottery tickets under the Lottery Act of 1895, ch. 191, 28 Stat. 963).

215. See *Caminetti v. United States*, 242 U.S. 470, 483 (1917) (conviction under White Slave Act of 1910, ch. 395, 36 Stat. 825 for single instance of interstate transportation of woman "for the purpose of debauchery," despite absence of commercial motive or gain).

216. In *Wickard*, the Court approvingly cited Chief Justice Marshall's definition of the commerce power "with a breadth never yet exceeded" and stated that in adopting "broader interpretations of the Commerce Clause" the Court was bringing about "a return to the principles first enunciated" in *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1 (1824). *Wickard*, 317 U.S. at 122.

217. *Gibbons*, 22 U.S. (9 Wheat.) at 196-97.

218. In Chief Justice Marshall's view,

[t]he wisdom and the discretion of congress, their identity with the people, and the influence which their constituents possess at elections, are, in this, as in many other instances, as that, for example, of declaring war, the sole restraints on which they have relied, to secure them from its abuse. They are the restraints on which the people must often rely solely, in all representative governments.

Id.

ercise of the power is political, rather than judicial.²¹⁹ In fact, the Court restricts judicial review in commerce power cases to determining whether Congress had a rational basis for concluding that the regulated subject matter could affect interstate commerce.²²⁰ Since 1936, the Supreme Court has held only once,²²¹ and then fleetingly,²²² that a federal statute exceeded the commerce power. With the disappearance of the narrow sphere carved out to protect state governments from federal economic regulation,²²³ it remains true that the power "is as broad as the economic needs of the nation."²²⁴

B. *Affirmative Constitutional Limits on the Exercise of the Enumerated Powers*

Particularly in view of express congressional findings that the

219. See *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, *reh'g denied*, 471 U.S. 1049 (1985). In *Wickard*, the Court taught that conflicts of economic interest under federal regulatory legislation are "wisely left . . . to . . . Congress under its more flexible and responsible legislative process. Such conflicts rarely lend themselves to judicial determination. And with the wisdom, workability, or fairness, of the plan of regulation we have nothing to do." 317 U.S. at 129. See *United States v. Darby*, 312 U.S. 100, 115, 120-21 (1941); *United States v. Carolene Prods. Co.*, 304 U.S. 144, 151 (1938); *Northern Sec. Co. v. United States*, 193 U.S. 197, 337-38, 350-52 (1904); *Champion v. Ames*, 188 U.S. 321, 353 (1903); *Veazie Bank v. Fenno*, 75 U.S. (8 Wall.) 533, 548 (1869).

220. In *Carolene Prods. Co.*, the Court stated the rule which has prevailed since:

Even in the absence of such aids the existence of facts supporting the legislative judgment is to be presumed, for regulatory legislation affecting ordinary commercial transactions is not to be pronounced unconstitutional unless in the light of the facts made known or generally assumed it is of such a character as to preclude the assumption that it rests upon some rational basis within the knowledge and experience of the legislators.

Id. at 152 (footnote omitted). Justice Stone's opinion in *Carolene Prods. Co.* also outlined the exception to the rule, indicating that closer scrutiny is required when legislation affects a preferred right such as those secured by the Bill of Rights, or a racial minority. *Id.* at 152 n.4.

221. In *National League of Cities v. Usery*, 426 U.S. 833, 852 (1976), the Supreme Court held that the extension of the minimum wage and maximum hour provisions of the Fair Labor Standards Act of 1974 as applied to state governments was unconstitutional under the tenth amendment, since the provisions operated to directly displace the states' freedom to structure integral operations in areas of traditional government functions. *National League overruled Maryland v. Wirtz*, 392 U.S. 183 (1968).

222. *National League* in turn was overruled in *Garcia*, 469 U.S. at 531.

223. After being dismissed as a limitation on the enumerated commerce power in *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 198 (1824) and *Champion*, 188 U.S. at 357, the tenth amendment reappeared as a bar to federal regulation of local private economic activity in *Hammer v. Dagenhart*, 247 U.S. 251 (1918), eventually overruled in *Darby*, 312 U.S. at 100. In *Darby*, the Court dismissed the tenth amendment as a "truism" ineffective to limit federal authority from resorting to all means for the exercise of a granted power which are appropriate and plainly adapted to the permitted end. 312 U.S. at 124. The dissenting justices in *Garcia* vowed to restore the tenth amendment limitation. 469 U.S. at 580 (Rehnquist, J., dissenting); *id.* at 589 (O'Connor, J., dissenting).

224. *American Power & Light Co. v. SEC*, 329 U.S. 90, 104 (1946).

semiconductor industry is threatened by copying,²²⁵ it appears incontrovertible that the Chip Act is within the commerce power as a regulation of predatory practices that "affect" both foreign and interstate commerce.²²⁶ However, a determination that either a regulated article or practice affects commerce between the states is not sufficient in itself to sustain the validity of a law passed pursuant to the commerce power. Two inquiries are necessary: first, whether the constitutional provision relied upon provides the power in the first instance,²²⁷ and second, whether an affirmative limitation within the Constitution restricts a power otherwise granted. With respect to the first consideration, the commerce power provides a more certain basis for chip protection legislation than the copyright clause, because it does not contain the requirements of a "writing" and an "author."²²⁸ However, with regard to the second question, the Supreme Court has recently reaffirmed that in the exercise of the commerce power, Congress may not transgress any affirmative limitation imposed by other constitutional provisions.²²⁹

Although the restriction of article I, section 8 powers has not been a fertile field of litigation in recent years, the Supreme Court has limited the exercise of enumerated legislative powers by applying various constitutional limitations, including Bill of Rights provisions such as the fifth²³⁰ and sixth²³¹ amendments,²³² as well as a number

225. See *supra* notes 21-22.

226. Regulating production of a commodity is a legitimate exercise of the commerce power if the commodity "[e]xerts a substantial economic effect on interstate commerce" even though the activity may be local and may not even be regarded as commerce. See *Wickard v. Filburn*, 317 U.S. 111, 125 (1942).

227. The taxation power, for example, may be augmented by the currency power (U.S. CONST. art. I, § 8, cl. 5), as in *Veazie Bank v. Fenno*, 75 U.S. (8 Wall.) 533 (1869), or by the arguably broader commerce power, see *Minor v. United States*, 396 U.S. 87, 98 n.13 (1969); *Edye v. Robertson*, 112 U.S. 580, 595-96 (1884) ("Head Money Cases"), to sustain legislation in a given instance.

228. See 1 M. NIMMER, *supra* note 51, at 1.09; *Chamberlin v. Uris Sales Corp.*, 150 F.2d 512, 513 n.2 (2d Cir. 1945).

229. See *EEOC v. Wyoming*, 460 U.S. 226, 236, 248 (1983); cf. *South Dakota v. Dole*, 107 S. Ct. 2793, 2796-97 (1987) (spending power). This principle has been recognized since *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 196 (1824), although its application has varied widely, particularly in the era from *Adair v. United States*, 208 U.S. 161, 180 (1908) to *Railroad Retirement Bd. v. Alton R.R.*, 295 U.S. 330, 347 (1935) when the Court was willing to strike down commerce clause legislation on the basis that economic due process under the fifth amendment was denied.

230. See *Leary v. United States*, 395 U.S. 6 (1969).

231. See *United States v. Jackson*, 390 U.S. 570 (1968).

232. See *National League of Cities v. Usery*, 426 U.S. 833, 841 (1976); *Reid v. Covert*, 354 U.S. 1, 44 (Frankfurter, J., concurring) (1957). Although *National League of Cities* has been overruled, the principle that affirmative limitations contained in the Constitution limit the

of others.²³³ The establishment clause of the first amendment operates as a specific constitutional limitation on the exercise by Congress of the taxing and spending power.²³⁴ Improper delegation of article I, section 8 legislative powers to the executive is prohibited²³⁵ both by the requirement that all legislative powers shall be vested in Congress²³⁶ and by the necessary and proper clause.²³⁷ Although congressional regulatory power under the postal clause²³⁸ permits the Legislature to forbid use of the mails,²³⁹ and to regulate their content,²⁴⁰ such exercise of the postal power is subject to first amendment guarantees of freedom of speech²⁴¹ and the fourth amendment prohibition against unreasonable search and seizure.²⁴² The enumerated power "to make rules for the government and regulation of the land and naval forces"²⁴³ has been held limited by the due process clause,²⁴⁴ and this basic constitutional guarantee of due process also limits the exercise of the naturalization power,²⁴⁵ which has been characterized as the broadest of the enumerated powers.²⁴⁶ The prohibition against bills of attainder²⁴⁷ applies to prevent the spending power²⁴⁸ from being exercised to legislatively forbid payment of sala-

exercise of the commerce power was also recognized by the dissenting justices in *National League of Cities*, who disputed the contention that any restraint based on state sovereignty was found in the Constitution. 426 U.S. at 858.

233. For discussion of limits on the commerce power, see articles cited *supra* note 204.

234. See *Flast v. Cohen*, 392 U.S. 83, 103-04 (1968).

235. See *INS v. Chadha*, 462 U.S. 919 (1983); see also *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936) (Bituminous Coal Conservation Act of 1935, ch. 824, 49 Stat. 991); *Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935) (section 3 of National Industrial Recovery Act of 1933); *Panama Ref. Co. v. Ryan*, 293 U.S. 388 (1935) (section 9 of National Industrial Recovery Act of 1933, ch. 90, 48 Stat. 195, 200).

236. U.S. CONST. art. I, § 1.

237. *Id.* § 8, cl. 18.

238. *Id.* § 8, cl. 7.

239. See *Electric Bond & Share Co. v. SEC*, 303 U.S. 419, 442 (1938).

240. See *Roth v. United States*, 354 U.S. 476 (1957).

241. See *Lamont v. Postmaster Gen.*, 381 U.S. 301, 307 (1965); *Milwaukee Social Dem. Pub. Co. v. Burleson*, 255 U.S. 407, 437 (1921) (Holmes, J., dissenting). Any restriction on the free dissemination of information requires procedural safeguards to protect the exercise of first amendment rights. See *Blount v. Rizzi*, 400 U.S. 410, 416 (1971).

242. See *Ex parte Jackson*, 96 U.S. 727, 732-33 (1878).

243. U.S. CONST. art. I, § 8, cl. 14.

244. See *Reid v. Covert*, 354 U.S. 1 (1957).

245. U.S. CONST. art. I, § 8, cl. 4.

246. See *Fiallo v. Bell*, 430 U.S. 787, 792 (1977); *Kwong Hai Chew v. Colding*, 344 U.S. 590, 596 (1953); *Oceanic Steam Navigation Co. v. Stranahan*, 214 U.S. 320, 339 (1909); *Yamataya v. Fisher*, 189 U.S. 86, 100-01 (1903).

247. U.S. CONST. art. I, § 9, cl. 3.

248. *Id.* § 8, cl. 1 gives Congress the power "to lay and collect taxes . . . to pay the debts and provide for the common defence and general welfare of the United States." Article I, section 9, clause 7 provides that "[n]o money shall be drawn from the Treasury but in conse-

ries to named federal employees.²⁴⁹ Courts established under the bankruptcy power²⁵⁰ must conform to the requirements of article III.²⁵¹

These individual instances of affirmative constitutional limitations on article I, section 8 powers illustrate the general principle that despite their "plenary" nature, the enumerated legislative powers may not be exercised in derogation of any limitation on the power of the federal government contained in the Constitution.²⁵² As Justice Frankfurter emphasized in *Reid v. Covert*:

The Constitution is an organic scheme of government to be dealt with as an entirety. A particular provision cannot be severed from the rest of the Constitution. Our conclusion in these cases therefore must take due account of Article III and the Fifth and Sixth Amendments.²⁵³

From the standpoint of such external, affirmative limitations, the commerce power is no more "plenary" than the other "plenary" powers conferred on the legislative branch by article I, including the patent power.²⁵⁴ If an affirmative constitutional limitation is imposed by the patent clause, it cannot be avoided by merely citing another enumerated power. It cannot seriously be contended that Congress could overstep the express limitations of the patent clause by granting perpetual, exclusive rights in a discovery under its commerce power,²⁵⁵ or by securing such rights for subject matter which is not novel,²⁵⁶ or to an importer rather than an inventor.²⁵⁷ For the same reasons, any implied constitutional restriction against securing exclu-

quence of appropriations made by law." U.S. CONST. art. I, § 9, cl. 7.

249. See *United States v. Lovett*, 328 U.S. 303 (1946).

250. U.S. CONST. art. I, § 8, cl. 4.

251. See *Northern Pipeline Constr. Co. v. Marathon Pipe Line Co.*, 458 U.S. 50 (1982).

252. See generally *United States v. Darby*, 312 U.S. 100, 115 (1941); *United States v. Carolene Prods. Co.*, 304 U.S. 144, 152 n.4 (1938).

253. 354 U.S. 1, 44 (1957) (Black, J., concurring). Justice Black agreed that "[t]he United States is entirely a creature of the Constitution. Its power and authority have no other source. It can only act in accordance with all the limitations imposed by the Constitution." *Id.* at 5-6 (opinion joined by Justices Warren, Douglas, and Brennan).

254. See *McClurg v. Kingsland*, 42 U.S. (1 How.) 202 (1843), quoted *infra* note 264; cf. *Solorio v. United States*, 107 S. Ct. 2924, 2928 (1987).

255. See *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

256. See *supra* note 98 and accompanying text; see also *infra* note 430.

257. The term "inventor" has long been construed as expressing a requirement of originality. Such a construction prevents the issuance of a patent to the first importer of a useful article, or to one who derives an invention from another. See, e.g., *Blanchard v. Sprague*, 3 F. Cas. 648, 650 (C.C.D. Mass. 1839) (No. 1,518); *Whitney v. Emmett*, 29 F. Cas. 1074, 1082 (C.C.E.D. Pa. 1831) (No. 17,585).

sive rights in a useful article under the patent power, resulting from the failure to require a sufficient degree of nonobviousness, should not be avoided by congressional invocation of the commerce power. With respect to constitutional restrictions on government-established "monopoly" rights, the congressional power under both the copy-right clause and the commerce clause depends upon the same issue: the existence of an implied constitutional threshold requirement of nonobviousness.

IV. THE APPROPRIATENESS OF A CONSTITUTIONAL STANDARD

With respect to the history of the constitutional standard, apart from its reference to the concurring opinion in *Great Atl. and Pac. Tea Co.*,²⁵⁸ the Court in *Graham* cites no case precedent for the conclusion that the statement of purpose contained in the intellectual property clause "is both a grant of power and a limitation."²⁵⁹ This constitutional doctrine had never been articulated clearly before the *Great Atl. and Pac. Tea Co.* decision.²⁶⁰ In the century between the first formulation of the "patentable invention" standard in *Hotchkiss*,²⁶¹ and the codification of the obviousness standard in section 103,²⁶² the requirement of a minimum difference beyond mere novelty was judicially developed in the context of statutory patent law fashioned by Congress.²⁶³ During that time, the Supreme Court generally indicated its intention to fulfill the legislative purpose without

258. 340 U.S. 147 (1950).

259. *Graham*, 383 U.S. at 5.

260. Prior to *Great Atl. & Pac. Tea Co.*, the constitutional theory proposed in the concurring opinion had not been expounded clearly even by Justices Douglas and Black. See, e.g., *Goodyear Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275, 279 (1944) (Black, J., dissenting); *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) (Douglas, J.). A conceptually distinct constitutional theory is presented by Justice Black's dissent in *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 137 (1942), based not upon the requirement of promoting the progress of the useful arts, but rather on an essentially semantic argument that the constitutional terms "inventors" and "discoveries" may be redefined according to individual justices' views of the intrinsic worth of inventions. *Id.* at 138. See also *Williams Mfg. Co. v. United States Shoe Mach. Corp.*, 316 U.S. 364, 384 (1942) (Black, J. dissenting).

261. 52 U.S. (11 How.) 248 (1851).

262. Act of July 19, 1952, ch. 950, 66 Stat. 792, 798.

263. The post-*Hotchkiss* history of the patentability standard fails to disclose any definite conception of implicit limitations on congressional discretion in article I, section 8, and at most contains scattered references to the general constitutional purpose fulfilled by the patent statutes. See, e.g., *Thompson v. Boisselier*, 114 U.S. 1 (1885); *Hollister v. Benedict & Burnham Mfg. Co.*, 113 U.S. 59, 73 (1885). Neither decision contains any discussion of a constitutional requirement distinct from the statutory standard fashioned by Congress, or indicates that Congress is limited by the statement of purpose in the intellectual property clause in selecting a minimum patentability standard.

recognizing an implicit constitutional limitation on congressional power to define the conditions for patentability.²⁶⁴ Only with the appearance of antimonopolist fervor in the Court during the 1940's was the theory of an implicit limitation in the preamble of the intellectual property clause developed, leading to the concurring opinion in *Great Atl. and Pac. Tea Co.*²⁶⁵

It is noteworthy that the *Great Atl. and Pac. Tea Co.* concurring opinion itself identifies no precedent supporting its constitutional theory that the legislative power to grant patents is "qualified" by the statement of purpose contained in article I, section 8, or that the standard of patentability is constitutional rather than statutory.²⁶⁶ Neither the cases cited in support of the "inventive genius" standard²⁶⁷ nor Justice Bradley's antimonopolist credo from *Atlantic Works v. Brady*²⁶⁸ rests on a constitutional basis. Furthermore, none of the twenty Supreme Court cases cited as invalidating "flimsy and spurious" patents²⁶⁹ so much as refers to the asserted "constitutional

264. Any doubt as to whether the intellectual property clause, in distinction to the remaining enumerated powers of article I, was historically regarded as implying hidden constitutional prohibitions based on an intrinsic constitutional antagonism to limited patent rights, should be dispelled by the affirmative declaration in *McClurg v. Kingsland*, 42 U.S. (1 How.) 202 (1843) that

the power of Congress to legislate upon the subject of patents is plenary by the terms of the Constitution, and as there are no restraints on its exercise, there can be no limitation of their right to modify [the patent laws] at their pleasure, so long as they do not take away the rights of property in existing patents.

Id. at 206. See also *United States v. Duell*, 172 U.S. 576, 583 (1899).

265. The impact on the Supreme Court of patent pooling practices during the Great Depression is described in Gregg, *Tracing the Concept of 'Patentable Invention'*, 13 VILL. L. REV. 98, 104-06 (1967). Cf. *Williams Mfg. Co. v. United States Shoe Mach. Corp.*, 316 U.S. 364, 380-82 (1942) (Black, J., dissenting, joined by Justices Douglas and Murphy).

266. 340 U.S. at 154-55.

267. *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941); *Mantle Lamp Co. v. Aluminum Prods. Co.*, 301 U.S. 544 (1937); *Concrete Appliances Co. v. Gomery*, 269 U.S. 177 (1925); *Potts v. Creager*, 155 U.S. 597 (1895); *Reckendorfer v. Faber*, 92 U.S. 347 (1876); *Smith v. Whitman Saddle Co.*, 148 U.S. 674 (1893).

268. The concurring opinion approvingly refers to Justice Bradley's condemnation in *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1883) of the "indiscriminate creation of exclusive privileges" under the patent laws that has the effect of creating "a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts." *Great Atl. and Pac. Tea Co.*, 340 U.S. at 155.

269. *Dunham v. Dennison Mfg. Co.*, 154 U.S. 103 (1894); *Morgan Envelope Co. v. Albany Paper Co.*, 152 U.S. 425 (1894); *Knapp v. Morss*, 150 U.S. 221 (1893); *Pope Mfg. Co. v. Gormully Mfg. Co.*, 144 U.S. 238 (1892); *Patent Clothing Co. v. Glover*, 141 U.S. 560 (1891); *Adams v. Bellaire Stamping Co.*, 141 U.S. 539 (1891); *Cluett v. Claflin*, 140 U.S. 180 (1891); *Shenfield v. Nashawannuck Mfg. Co.*, 137 U.S. 56 (1890); *Florsheim v. Schilling*, 137 U.S. 64 (1890); *St. Germain v. Brunswick*, 135 U.S. 227 (1890); *Hendy v. Miner's Iron*

standards which are supposed to govern" determinations of patent validity.²⁷⁰

Instead, the *Graham* Court discerns a constitutional "standard" in the statement of purpose of the intellectual property clause based upon the "stated purpose of the Framers."²⁷¹ Although there is no evidence indicating the intentions²⁷² or identities²⁷³ of the actual framers of the intellectual property clause, the Court offers an imaginative reconstruction based principally upon the letters of Thomas Jefferson.²⁷⁴ Jefferson's preeminence in the Court's history of patentability is based on his experience in reviewing patent applications under the 1790 Patent Act as Secretary of State²⁷⁵ and as the "author" of the 1793 Patent Act.²⁷⁶ However, the Court's historical analysis of the nonobviousness requirement overlooks Congress' express rejection of the defense, included by Jefferson in the draft 1793 Patent Act, that an invention "is so unimportant and obvious that it ought not be the subject of an exclusive right."²⁷⁷ Jefferson's unheeded proposals for restriction, if not elimination, of the intellectual property power²⁷⁸ indicate that his opinions were shared neither by

Works, 127 U.S. 370 (1888); *Preston v. Manard*, 116 U.S. 661 (1886); *Miller v. Foree*, 116 U.S. 22 (1885); *Double-Pointed Tack Co. v. Two Rivers Mfg. Co.*, 109 U.S. 117 (1883); *Dalton v. Jennings*, 93 U.S. 271 (1876); *Reckendorfer*, 92 U.S. at 347; *Brown v. Piper*, 91 U.S. 37 (1875); *Union Paper Collar Co. v. Van Dusen*, 90 U.S. (23 Wall.) 530 (1875); *Rubber Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498 (1874); *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851). The vintage of these cases is apparent; with the exception of *Hotchkiss* they stem from the post-Civil War period of antimonopolist fervor which culminated in the enactment of the Sherman Act in 1890. See generally Letwin, *Congress and the Sherman Antitrust Law: 1887-1890*, 23 U. CHI. L. REV. 221, 232-35 (1956).

270. *Great Atl. and Pac. Tea Co.*, 340 U.S. at 158.

271. 383 U.S. at 6.

272. The intellectual property clause was adopted without debate at the Constitutional Convention, and there was no reference to it in the minutes of the drafting Committee. See Fenning, *supra* note 96, at 443.

273. Charles Pinckney of South Carolina and James Madison both submitted proposals for copyright and patent powers to the Constitutional Convention, but the language adopted does not correspond to any of their suggestions. The more general language of the intellectual property clause originated in the Committee of Eleven, and the identity of its drafter is unknown. Fenning, *supra* note 96, at 441-42.

274. The course of Jefferson's changing thoughts on the benefit of patents is traced in *Graham*, 383 U.S. at 7-8. See *supra* notes 108-10 and accompanying text.

275. *Graham*, 383 U.S. at 6-7.

276. *Id.*

277. 5 THE WRITINGS OF THOMAS JEFFERSON, *Draft of a Proposed Bill to Promote the Progress of the Useful Arts* 279 (Ford ed. 1895).

278. Jefferson, who was in France during the Constitutional Convention in the summer of 1787, played no role in the drafting of the Constitution. He promptly responded to the adoption of the intellectual property clause with a proposal for its effective repeal by a bill of rights provision which would prohibit any "monopolies," including those for a limited term intended to stimulate "ingenuity." See 6 THE WRITINGS OF THOMAS JEFFERSON, *Letter to*

the Framers of the Constitution nor the Congresses that drafted the Bill of Rights and the first patent act.²⁷⁹

The absence of an historical constitutional nonobviousness requirement is of course not dispositive of the issue whether the Supreme Court should now impose a constitutional limit on the legislative power to secure exclusive rights in useful articles. Recent history is replete with examples of constitutional limitations declared by the Court in its role of expounding and adapting the basic law to meet changed political, social and economic circumstances, even though it departs from the intentions of the Framers.²⁸⁰ The intellectual property clause is no exception to the rule that has provided the judiciary with latitude in redefining constitutional terms in an attempt to develop "evolving standards . . . that mark the progress of a maturing society."²⁸¹ In a famous early statement, Judge Learned Hand rejected the theory that the copyright clause "embalms inflexibly the habits of 1789" in defining the intellectual property power of Congress, maintaining instead that the

Madison (July, 1788) 47 (Ford ed. 1895); see also 4 THE WRITINGS OF THOMAS JEFFERSON, *Letter to Madison (Dec. 1787)* 476 (Ford ed. 1895). This suggestion was rejected by the drafters of the Bill of Rights in Congress, along with Jefferson's later proposal for a ninth article to the Constitution which would have permitted limited "monopolies" for literary productions and inventions. 5 THE WRITINGS OF THOMAS JEFFERSON, *Letter to Madison (August 1789)* 113 (Ford ed. 1895). The correspondence is paraphrased by the Court in *Graham*, 383 U.S. at 7-8.

279. In *Burrow-Giles Lithographic Co.*, the Supreme Court emphasized the importance of early legislation to the proper construction of the intellectual property clause:

The construction placed upon the Constitution by the first act of 1790, and the act of 1802, by the men who were contemporary with its formation, many of whom were members of the convention which framed it, is of itself entitled to very great weight, and when it is remembered that the rights thus established have not been disputed during a period of nearly a century, it is almost conclusive.

111 U.S. at 57.

280. See, e.g., *Roe v. Wade*, 410 U.S. 113 (1973) (right of privacy requires right of elective abortion in first trimester of pregnancy); *Furman v. Georgia*, 408 U.S. 238 (1972) (discretionary death penalty violates eighth amendment prohibition of cruel and unusual punishment); *Griffin v. Breckenridge*, 403 U.S. 88 (1971) (constitutional right of privacy under ninth amendment); *Reynolds v. Sims*, 377 U.S. 533 (1964) (equal protection clause of fourteenth amendment requires apportionment of seats in both houses of bicameral state legislatures on a population basis).

281. *Trop v. Dulles*, 356 U.S. 86, 100-01 (1958). The present discussion is not concerned with the legitimacy or wisdom of this doctrine. It instead acknowledges the fact that the Supreme Court has consistently applied the metaphor of a "living" Constitution, according to which judicial reinterpretation of concepts such as due process, equal protection, and cruel and unusual punishment has largely replaced amendment as the practical method of constitutional development. See Grey, *Do We Have an Unwritten Constitution?*, 27 STAN. L. REV. 703 (1975); Reid, *Mr. Justice Black and the Living Constitution*, 76 HARV. L. REV. 673 (1963).

grants of power to Congress comprise, not only what was then known, but what the ingenuity of men should devise thereafter. Of course, the new subject-matter must have some relation to the grant; but we interpret it by the general practices of civilized peoples in similar fields, for it is not a straight-jacket, but a charter for a living people.²⁸²

The issue now addressed is whether the judiciary should exercise this discretion by establishing a constitutional patentability requirement, and specifically a threshold nonobviousness requirement, in the direction indicated by *Graham*.²⁸³

In determining this issue of crucial importance to intellectual property law, the constitutional element of the *Graham* opinion should be entitled to little precedential weight. The validity of the patent at issue in that case²⁸⁴ could be determined on the basis of the statutory standards in effect, and no question of the constitutionality of the patentability standard imposed under section 103 was properly before the Court for its consideration.²⁸⁵ In venturing an opinion on constitutional requirements not necessary to the decision, the *Graham* Court departed from its own well-settled rules that a case should be disposed of on a statutory basis if possible,²⁸⁶ and that the

282. *Reiss v. National Quotation Bureau, Inc.*, 276 F. 717, 719 (S.D.N.Y. 1921). *Cf. Twining v. New Jersey*, 211 U.S. 78, 101 (1908) (under the due process clause, seventeenth century criminal procedure is not "fastened upon the American jurisprudence like a straight jacket, only to be unloosed by constitutional amendment").

283. 383 U.S. 1 (1966).

284. As indeed the validity of the patents at issue in *Great Atl. and Pacific Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147 (1950); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969); *Thompson v. Boisselier*, 114 U.S. 1 (1885); *Hollister v. Benedict & Burnham Mfg. Co.*, 113 U.S. 59 (1885) and every other Supreme Court patent validity case with constitutional overtones.

285. See *Mazer v. Stein*, 347 U.S. 201, 206 n.5, 208 n.6 (1954) (declining to consider whether copyrighted statuettes were constitutional "writings" when this question was not raised in the petition for certiorari).

286. See *Ashwander v. Tennessee Valley Auth.*, 297 U.S. 288, 341 (1936) (Brandeis, J., concurring):

The Court will not pass upon a constitutional question although properly presented by the record, if there is also present some other ground upon which the case may be disposed of. . . . Thus, if a case can be decided on either of two grounds, one involving a constitutional question, the other a question of statutory construction, the Court will decide only the latter.

Id. at 347. Justice Brandeis' concurring opinion remains one of the most authoritative descriptions of the rules fashioned and used by the Court to avoid passing on constitutional issues. As he instructed,

[c]onsiderations of propriety as well as long-established practice, demand that we refrain from passing upon the constitutionality of an act of Congress unless obliged to do so in the proper performance of our judicial function, when the question is raised by a party whose interests entitle him to raise it.

Court will not anticipate a question of constitutional law in advance of the necessity of deciding it.²⁸⁷ Indeed, the *Graham* admonitions regarding a “standard expressed in the Constitution [which] may not be ignored”²⁸⁸ are so vague as to provide little indication of any actual limit on the power to legislate. Moreover, they illustrate the danger inherent in an unnecessary judicial excursus into the constitutional realm,

upon issues which remain unfocused because they are not pressed before the Court with that clear concreteness provided when a question emerges precisely framed and necessary for decision from a clash of adversary argument exploring every aspect of a multi-faced situation embracing conflicting and demanding interests. . . .²⁸⁹

However, the *Graham* dicta require careful reexamination because they indicate an approach that might be followed when the issue of a constitutional nonobviousness requirement is first litigated in the context of the Semiconductor Chip Protection Act.

By expressly negating any requirement that mask works be nonobvious as a precondition for registration, the Chip Act squarely raises the issue of whether “originality” is a constitutionally sufficient threshold minimum difference for securing exclusive rights in a useful article. The constitutionality of the Act turns on the question of whether Congress could provide exclusive rights in mask works by fashioning a substantially lower standard than nonobviousness. Because Congress endorsed the industry view that the patent standard was unattainable for most mask works,²⁹⁰ and considered that the continued viability of the United States semiconductor industry depended on affording legal protection to chip designs under a lower threshold standard, resolution of the constitutional issue will be

Id. at 341 (citation omitted). *Accord* *Gulf Oil Co. v. Bernard*, 452 U.S. 89, 99 (1981).

287. *Ashwander*, 297 U.S. at 346-47 (quoting *Liverpool, N.Y. & Phila. S.S. Co. v. Emigration Comm'rs*, 113 U.S. 33, 39 (1885)); *see also* *Reid v. Covert*, 354 U.S. 1, 45 (1957) (Frankfurter, J., concurring). In *Reid*, Justice Frankfurter stated in his dissent that when the Court passes on the constitutionality of an act of Congress, two rules are required to which [the Court] has rigidly adhered, one, never to anticipate a question of constitutional law in advance of the necessity of deciding it; the other, never to formulate a rule of constitutional law broader than is required by the precise facts to which it is to be applied.

Id. *See generally* *Keystone Bituminous Coal Ass'n v. DeBenedictis*, 107 S. Ct. 1232, 1247 (1987); *Garcia*, 469 U.S. at 555-57; *Hodel v. Virginia Surface Mining Ass'n*, 452 U.S. 264, 294-95 (1981).

288. *Graham*, 383 U.S. at 6.

289. *United States v. Fruehauf*, 365 U.S. 146, 157 (1961).

290. *See supra* note 46.

likely to have a profound effect on the progress of the useful arts.

A. *The Article I, Section 8 Model*

The patent power, like the taxing and spending power,²⁹¹ the borrowing power,²⁹² the bankruptcy power²⁹³ and the commerce power,²⁹⁴ is a plenary economic power vested by the Constitution in the legislative branch. Resolution of the ultimate issue of the constitutional power of Congress to fix the standard of patentability requires that the intellectual property clause be considered in its article I, section 8 context.

Historically, federal authority has been chiefly defined by the taxing and commerce powers and the constitutional necessary and proper clause.²⁹⁵ Judicial construction of the parallel article I, section 8 economic powers²⁹⁶ provides a reliable guide to discovering those "limitations . . . prescribed in the Constitution"²⁹⁷ that may restrict exercise of congressional discretion in defining the legislative measures necessary and proper for carrying into execution the enumerated intellectual property power.

Such limitations may be of various types.²⁹⁸ Each enumerated power is subject to external limitations imposed by the other provisions of the Constitution.²⁹⁹ Further structural limitations prevent an

291. U.S. CONST. art. I, § 8, cl. 4.

292. *Id.* § 8, cl. 2.

293. *Id.* § 8, cl. 4.

294. *Id.* § 8, cl. 3.

295. See C. BLACK, PERSPECTIVES IN CONSTITUTIONAL LAW 21 (1963) [hereinafter BLACK].

296. The article I, section 8 economic powers provide a better standard of congressional power under the intellectual property clause than the other enumerated powers such as the powers to declare war and regulate the military (U.S. CONST. art. I, § 8, cl. 11-14) and the naturalization power (U.S. CONST. art. I, § 8, cl. 4). The Court has consistently refused to intervene and require a congressional declaration of war as a prerequisite to the use of military forces. See *Massachusetts v. Laird*, 400 U.S. 886 (1973) (Douglas, J., dissenting); *Mora v. MacNamara*, 389 U.S. 934 (1967) (Stewart, J., dissenting); *The Prize Cases*, 67 U.S. (2 Black) 635, 669-70 (1863); *Atlee v. Laird*, 347 F. Supp. 689 (E.D. Pa. 1972) (three-judge court), *aff'd*, 411 U.S. 911 (1973). Congressional exercise of the immigration power is largely beyond judicial review, see *Fiallo v. Bell*, 430 U.S. 787, 799 n.8 (1977); *Shaughnessy v. Mezei*, 345 U.S. 206, 210 (1953); *Chinese Exclusion Cases*, 130 U.S. 581 (1889), and the executive enjoys broad discretion in conducting foreign policy. See *Goldwater v. Carter*, 444 U.S. 996 (1979); *United States v. Curtis-Wright Export Corp.*, 299 U.S. 304, 315-18 (1936).

297. *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 196 (1824).

298. Professor Lawrence Tribe uses the term "external" to refer to structural limits and to express constitutional restrictions such as those in the Bill of Rights, and the term "internal" to describe limits inherent in the grants of power themselves. L. TRIBE, AMERICAN CONSTITUTIONAL LAW 224 (1978) [hereinafter TRIBE].

299. See *supra* notes 229-57 and accompanying text.

enumerated power from being exercised so as to impair the essential governmental structure established by the Constitution, whether for the preservation of the federal-state government relationship,³⁰⁰ the division of powers within the federal government,³⁰¹ or the separate powers confided to the federal government.³⁰² Finally, internal limits within the individual grants of power place restrictions upon their exercise. Internal limits may be reasonably explicit, such as the provision that no appropriation of money to raise and support armies shall be for a longer term than two years,³⁰³ or they may be more ambiguous, such as the provision that Congress may regulate commerce "among the several states."³⁰⁴

External limitations on the exercise of the intellectual property power are of little significance in the present discussion. Since the early unsuccessful attempts to declare patent extensions unconstitutional as *ex post facto* laws,³⁰⁵ express external constitutional limits have played little role in the development of patent law. The most significant external limitations operating upon the intellectual property power are the first amendment guarantees of freedom of speech and of the press which operate as potential limits on the copyright power.³⁰⁶ The effect of these external limits remains largely con-
 jec-

300. See, e.g., *Ashton v. Cameron County Water Improvement Dist.*, 298 U.S. 513 (1936) (bankruptcy power); *Coyle v. Oklahoma*, 221 U.S. 559, 565 (1911) (U.S. CONST. art. 4, § 3 admission power); *Pollock v. Farmers' Loan & Trust Co.*, 157 U.S. 429 (1895) (taxing power); *Patterson v. Kentucky*, 97 U.S. 501 (1879) (patent power).

301. See, e.g., *Bowsher v. Sinar*, 106 S. Ct. 3181, 3191-92 (1986) (improper delegation of executive power to officer of legislative branch); *INS v. Chadha*, 462 U.S. 919 (1983) (unicameral legislative veto violates requirement of bicameralism); *Buckley v. Valeo*, 424 U.S. 1, 124-40 (1976) (legislative appointment to executive offices unconstitutional); *Panama Ref. Co. v. Ryan*, 293 U.S. 388 (1935) (improper delegation of legislative power to executive).

302. See, e.g., *Brown v. Duquesne*, 60 U.S. (19 How.) 183, 195, 197 (1857) (power to grant patents held domestic in character and necessarily confined within the limits of the United States, in order to avoid interfering with power to regulate commerce with foreign nations and treaty-making power).

303. U.S. CONST. art. I, § 8, cl. 12.

304. Examples of express internal limitations include the restriction that exclusive rights may be secured under the intellectual property clause "for limited times"; the requirement of U.S. CONST. art. I, § 8, cl. 1 that "all duties, imposts and excises shall be uniform throughout the United States;" the similar provision of U.S. CONST. art. I, § 8, cl. 4, that naturalization and bankruptcy laws be "uniform . . . throughout the United States;" and the reservation to the states of "the appointment of the officers, and the authority of training the militia" provided by U.S. CONST. art. I, § 8, cl. 16.

305. See, e.g., *McClurg v. Kingsland* 42 U.S. (1 How.) 202 (1843); *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 230 (1832); *Bloomer v. Stolley*, 3 F. Cas. 729 (C.C.D. Ohio 1850) (No. 1,559); *Evans v. Jordan*, 8 F. Cas. 872 (C.C.D. Vir. 1813) (No. 4,564), *aff'd*, 13 U.S. (9 Cranch) 199 (1815).

306. See *Nimmer, Does Copyright Abridge the First Amendment Guarantees of Free Speech and the Press?*, 17 UCLA L. REV. 1180 (1970); Goldstein, *Copyright and the First*

tural, since the statutory provision permitting fair use of copyrighted works³⁰⁷ has been invoked to avoid conflict with the first amendment,³⁰⁸ and the Supreme Court has declined to discover a conflict between the purposes of copyright law and those of the first amendment.³⁰⁹ The restrictions that are of most interest in the present discussion of the intellectual property power are internal limitations, particularly limits implied from statements of purpose accompanying grants of power, and those imposed by the narrowing judicial definition of specific terms used in the individual grants.

B. *Limits Derived from Statements of Constitutional Purpose*

In its current interpretation of the intellectual property clause, the Supreme Court suggests a limitation on congressional power that allows Congress to secure exclusive rights in discoveries derived only from the purpose served by its exercise, i.e., "to promote the progress of . . . useful arts."³¹⁰ This coupling of a grant of power with language expressive of purpose is not unique in article I, section 8. It has several counterparts in the same constitutional section: (1) the power to impose taxes and pay debts to "provide for the common defence and general welfare of the United States,"³¹¹ (2) the power "[t]o make all laws which shall be necessary and proper for carrying into execution the foregoing powers and all other powers vested by this Constitution in the government of the United States,"³¹² and (3) the power to exercise exclusive legislation in places purchased "for the erection of forts, magazines, arsenals, dock-yards and other needful buildings."³¹³ In each instance a statement of purpose accompanies the grant of power. In interpreting these parallel provisions, the Court has rejected the theory that such a statement of purpose should be construed to express an implied limit on Congressional

Amendment, 70 COLUM. L. REV. 983 (1970); Sobel, *Copyright and the First Amendment: A Gathering Storm?*, 19 ASCAP COPYRIGHT L. SYMP. 43 (1971); Note, *Copyright Infringement and the First Amendment*, 79 COLUM. L. REV. 320 (1979).

307. 17 U.S.C. § 107 (1982).

308. See *Rosemont Enterprises, Inc. v. Random House, Inc.*, 366 F.2d 303 (2d Cir. 1966), cert. denied, 385 U.S. 1009 (1968); *Time, Inc. v. Bernard Geis Assocs.*, 293 F. Supp. 130 (S.D.N.Y. 1965).

309. See *Harper & Row Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539 (1985); cf. *San Francisco Arts & Athletics, Inc. v. United States Olympic Comm.*, 107 S. Ct. 2971 (1987) (trademark).

310. *Graham v. John Deere Co.*, 383 U.S. 1, 5-6 (1966).

311. U.S. CONST. art. I, § 8, cl. 1.

312. *Id.* § 8, cl. 18.

313. *Id.* § 8, cl. 17.

exercise of the power.

In *McCulloch v. Maryland*, the Supreme Court first addressed the question of whether the statement of purpose in the necessary and proper clause served to limit the lawmaking power of the federal government.³¹⁴ There, Maryland contended that the incorporation of the second Bank of America was unconstitutional because no enumerated power authorizes the federal government to establish banks, and because the necessary and proper clause limits the power to pass laws by permitting only enactments that are strictly necessary to execute the specifically enumerated powers.³¹⁵ In an analysis not restricted to the necessary and proper clause, the Court denied that constitutional grants of power are themselves limitations, considering instead: "If we apply this principle of construction to *any* of the powers of the government, we shall find it so pernicious in its operation that we shall be compelled to discard it."³¹⁶

The fundamental and opposite principle of constitutional construction announced in *McCulloch* was based upon pragmatic considerations, as well as the general character and internal arrangement of the Constitution. Recognizing the importance of the "ample powers, on the due execution of which the happiness and prosperity of the nation so vitally depends,"³¹⁷ Chief Justice Marshall concluded as a practical matter that the interests of the nation require the facilitation, rather than the limitation of their exercise, and that the Constitution cannot be presumed "to clog and embarrass" the execution of the enumerated powers "by withholding the most appropriate means."³¹⁸ The limitation-in-grant theory conflicted both with public policy and with the intentions of the Framers:

The subject is the execution of those great powers on which the welfare of a nation essentially depends. It must have been the intention of those who gave these powers, to insure, as far as human prudence could insure, their beneficial execution. This could not be done, by confiding the choice of means to such narrow limits as not to leave it in the power of congress to adopt any which might be appropriate, and which were conducive to the end. This provision is made in a constitution, intended to endure for ages to come, and consequently, to be adapted to the various *crises* of human affairs. To have prescribed the means

314. 17 U.S. (4 Wheat.) 316 (1819).

315. *Id.* at 412-14.

316. *Id.* at 416 (emphasis added).

317. *Id.* at 408.

318. *Id.*

by which government should, in all future time, execute its powers, would have been to change, entirely, the character of the instrument, and give it the properties of a legal code. It would have been an unwise attempt to provide, by immutable rules, for exigencies which, if foreseen at all, must have been seen dimly, and which can be best provided for as they occur.³¹⁹

Additional support for this conclusion was derived from the inclusion of the necessary and proper clause in article I, section 8, a constitutional section which grants, rather than restricts, the powers of the legislature.³²⁰

In rejecting the view that the grant of power implied any limitation,³²¹ Chief Justice Marshall established the principle that the necessary and proper clause expands the great enumerated powers, giving the Legislature wide discretion in selecting the means necessary to carry out the specifically enumerated powers.³²² The doctrine that the enumerated powers of the federal government are augmented by implied powers under the necessary and proper clause, and its corollary that the enumerated grants should not be narrowly construed by the judiciary,³²³ have been the constitutional cornerstone for the expansion of federal power under the commerce and taxing powers.

Since *McCulloch*, the most frequently litigated potential restriction on an enumerated power has been the parallel statement of purpose that Congress may tax and spend "to . . . provide for the . . . general welfare."³²⁴ Challenges to federal tax legislation illustrate the sometimes wavering principle of judicial deference to legislative judgment, but even in the era of *Hammer v. Dagenhart*,³²⁵ the Court did not depart from the cardinal principle that statements of purpose do not limit the enumerated powers.

Adhering to Chief Justice Marshall's broad conception of enu-

319. *Id.* at 415.

320. *Id.* at 419-20.

321. *Id.* at 415.

322. *Id.* at 421.

323. "[W]here the law is not prohibited, and is really calculated to effect any of the objects intrusted to the government, to undertake here to inquire into the degree of its necessity, would be to pass the line which circumscribes the judicial department, and to tread on legislative ground." *Id.* at 423.

324. U.S. CONST. art. I, § 8, cl. 1.

325. 247 U.S. 251 (1918). This case is often cited as epitomizing the Court's willingness, during the period from *In re Heff*, 197 U.S. 488 (1905), to *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936), to strike down federal economic legislation enacted under the taxing and commerce powers by applying freestanding notions of a sphere of police power and economic regulation reserved to the states.

merated federal powers, the Court in *McCray v. United States*³²⁶ reaffirmed that the taxing power is plenary,³²⁷ not strictly limited to the purpose of raising revenue,³²⁸ and may be exercised even to accomplish a collateral regulatory purpose.³²⁹ The Court's deference to congressional judgment³³⁰ and its reluctance to probe legislative motive were overcome in *Bailey v. Drexel Furniture Co.*³³¹ There, the Court invalidated a tax on companies employing child labor³³² as an impermissible attempt to regulate purely local matters within the police power of the states.³³³ In reaching a decision on the basis of the tenth amendment³³⁴ it was unnecessary to consider the scope of the general welfare clause. However, in later striking down a New Deal cotton processing tax³³⁵ on the similar ground that it invaded the province of agricultural production reserved to the states, the Court in *United States v. Butler*³³⁶ reached and rejected a narrow reading of the general welfare clause. In that case, the Court resolved the long debated issue of construction³³⁷ in favor of an independent fed-

326. 195 U.S. 27 (1904). The Court sustained a tax of ten cents per pound on artificially colored oleomargarine as compared with one-quarter cent per pound on white margarine despite objections that the legislation resulted from the impermissible motive of suppressing manufacture of colored margarine, rather than raising tax revenue. *Id.* at 51.

327. *Id.* at 56-57.

328. *Id.* at 51.

329. "The decisions of this Court lend no support whatsoever to the assumption that the judiciary may restrain the exercise of lawful power on the assumption that a wrongful purpose or motive has caused the power to be exerted." *Id.* at 56. *See also* *United States v. Doremus*, 249 U.S. 86 (1919) (upholding registration and record-keeping provisions imposed, in addition to payment of special tax on sales of narcotics, by the Harrison Narcotic Drug Act of 1914, ch. 1, 38 Stat. 785).

330. The Court considered that declaring an act within a conferred power to be unconstitutional

[b]ecause it appeared to the judicial mind that the particular exertion of constitutional power was either unwise or unjust . . . would be to overthrow the entire distinction between the legislative, judicial and executive departments of the government, upon which our system is founded, and would be a mere act of judicial usurpation.

McCray, 195 U.S. at 54.

331. 259 U.S. 20 (1922) ("Child Labor Tax Case").

332. A tax of 10% of net annual profits was imposed on any manufacturing firm employing child labor under Title 12 of the Revenue Act of Feb. 24, 1919, ch. 18, § 1200, 40 Stat. 1057, 1138.

333. *Bailey v. Drexel Furniture Co.*, 259 U.S. 20, 37 (1922).

334. *Id.* at 38.

335. The Agricultural Adjustment Act of 1933, ch. 25, § 9, 48 Stat. 31, 35, imposed a tax on the first processing of cotton, and further provided for payment of the proceeds to cotton farmers to secure reduced acreage.

336. 297 U.S. 1 (1936).

337. Madison asserted that the general welfare clause amounts to nothing more than a reference to the other powers enumerated in the subsequent clauses of the same section, and

eral power to spend limited only by the internal requirement that spending be for the general welfare.³³⁸ In holding the cotton tax unconstitutional, it was not necessary to determine the scope of the "general welfare of the United States" [limitation] or to determine whether an appropriation in aid of agriculture falls within it."³³⁹ *Butler* was decided on the alternate basis that the legislation impermissibly invaded the power to regulate agricultural production reserved to the states by the tenth amendment.³⁴⁰ The spending power was thus limited not by an internal restriction, but by the external limits imposed to preserve the federal-state relationship, and prevent the "total subversion of the governmental powers reserved to the individual states."³⁴¹ In subsequently sustaining a factually indistinguishable tax on coconut oil production³⁴² for the benefit of the government of the Philippines,³⁴³ the Court once again stressed the breadth of the power to promote the general welfare³⁴⁴ and the constitutional discretion of Congress,³⁴⁵ without recognizing a judicially

that the grant of the power to tax and spend for the national general welfare must be confined to the enumerated legislative fields committed to Congress. See *United States v. Butler*, 297 U.S. 1, 65 (1937) (citing *THE FEDERALIST* No. 41 (Madison)). Hamilton, followed by Justice Story, asserted that the clause confers a power distinct from those subsequently enumerated and is not restricted in meaning. He concluded that Congress has a substantive power to tax and to appropriate, limited only by the requirement that it shall be exercised to provide for the general welfare of the United States. See *Id.* at 65-66 (citing *THE FEDERALIST* Nos. 30, 34 (Hamilton)). The Court adopted Justice Story's view, that "[t]he power of Congress to authorize expenditure of public moneys for public purposes is not limited by the direct grants of legislative power found in the Constitution." *Id.* at 66.

338. Although it did not attempt to delineate possible internal limits imposed by the general welfare clause, the Court indicated the breadth of the power by referring to the "[w]ide range of discretion permitted to Congress. How great is the extent of that range, when the subject is the promotion of the general welfare of the United States, we need hardly remark." *Id.* at 67. See Justice Stone's comment that "[t]he constitutional power of Congress to levy an excise tax upon the processing of agricultural products is not questioned." *Id.* at 79 (dissenting).

339. *Id.* at 68.

340. *Id.*

341. *Id.* at 75.

342. Revenue Act of 1934, ch. 277, § 602 ½, 48 Stat. 763.

343. *Cincinnati Soap Co. v. United States*, 301 U.S. 308 (1937).

344. The measure was sustained as an act in discharge of a moral "debt" within the meaning of the taxation clause. *Id.* at 315.

345. Considering whether the tax or appropriation was for the constitutional purpose "to pay the debts and provide for the common defence and general welfare of the United States," the Court stated, "[p]rimarily, and in a very high degree, whether a tax serves any of these purposes is a practical question addressed to the law-making department. And it will require a very plain case to warrant the courts in setting aside the conclusion of Congress in that regard." *Id.* at 313. The Court further stated, "queries directly or indirectly challenging the wisdom or necessity of the Congressional action, are all matters, as we have repeatedly pointed out, with which the courts have nothing to do." *Id.* at 324.

enforceable internal limit in the language of the grant.³⁴⁶

The authority of *Drexel Furniture Co.* and *Bailey* was greatly eroded by subsequent decisions upholding social security taxes against tenth amendment challenges.³⁴⁷ Confirming that the unemployment benefit tax³⁴⁸ and the old age security tax³⁴⁹ are within the national purpose of providing for the general welfare³⁵⁰ and do not contravene external limitations on the exercise of federal power by the tenth³⁵¹ or fifth³⁵² amendments, these cases indicate that the remaining internal limit that a tax or spending measure must serve a general, rather than a merely local, purpose³⁵³ is not a static, historically determined limit³⁵⁴ but a matter "in which discretion is at large. The discretion, however, is not confided to the courts. The discretion belongs to Congress, unless the choice is clearly wrong, a display of arbitrary power, not an exercise of judgment."³⁵⁵

While maintaining in principle that spending must promote the general welfare, the Court has declined to assume any significant role in overseeing whether particular legislation fulfills this purpose,³⁵⁶ or to find a limitation in the grant of power. In *Buckley v. Valeo*,³⁵⁷ opponents of the Federal Election Campaign Act of 1971³⁵⁸ urged that public financing of presidential elections³⁵⁹ was "contrary to the general welfare" clause.³⁶⁰ Citing *McCulloch*, the

346. Since the Philippines were a dependency of the federal government, rather than a state, the federal-state structural limitations earlier invoked in *Butler* were inapplicable. *Cincinnati Soap*, 301 U.S. at 312, 317.

347. *Steward Machine Co. v. Davis*, 301 U.S. 548 (1937) (unemployment compensation); *Helvering v. Davis*, 301 U.S. 619 (1937) (old age benefits). At least with respect to economic matters affecting private entities, the tenth amendment was declared a "truism" ineffective to limit the declared legislative powers in *United States v. Darby*, 312 U.S. 100, 124 (1941).

348. Imposed by Title IX of the Social Security Act of 1935, ch. 531, 49 Stat. 620, 622 (codified as amended at 42 U.S.C. §§ 1101-1109 (Supp. II 1984)).

349. Title II of the Social Security Act of 1935, ch. 531, 49 Stat. 620, 622 (codified as amended at 42 U.S.C. §§ 401-433 (Supp. 1986)).

350. *Steward Mach. Co.*, 301 U.S. at 586-87; *Helvering*, 301 U.S. at 640-41.

351. *Steward Mach. Co.*, 301 U.S. at 585, 593.

352. *Id.* at 548, 583-84.

353. *Helvering*, 301 U.S. at 640.

354. *Id.* at 641.

355. *Id.* at 640; accord *Bowen v. Gilliard*, 107 S. Ct. 3008, 3015 (1987); *Bowen v. Owens*, 476 U.S. 340, 345 (1986).

356. See, e.g., *South Dakota v. Dole*, 107 S. Ct. 2793, 2796 (1987); *Buckley v. Valeo*, 424 U.S. 1, 90, 91 (1976); *United States v. Gerlach Live Stock Co.*, 339 U.S. 725 (1950).

357. 424 U.S. 1 (1976).

358. 2 U.S.C. §§ 431-455 (1982 & Supp. II 1984); 18 U.S.C. §§ 591-607 (1982).

359. Established by Subtitle H of the Internal Revenue Code of 1954, 26 U.S.C. §§ 6096, 9001-9012, 9031-9042 (Supp. II 1984).

360. *Buckley*, 424 U.S. at 91.

Court disagreed, stating that this contention "erroneously treats the General Welfare Clause as a limitation upon congressional power. It is rather a grant of power, the scope of which is quite expansive, particularly in view of the enlargement of power by the Necessary and Proper Clause."³⁶¹

Judicial consideration of the remaining statement of purpose in article I, section 8, although less frequently litigated, confirms the rule of construction followed since *McCulloch*. The power to exercise exclusive legislation over all places purchased "by the consent of the legislature of the state in which the same shall be, for the erection of forts, magazines, arsenals, dock-yards and other needful buildings"³⁶² has not prevented the exercise of exclusive jurisdiction over land taken for other than the enumerated purposes, including forests, parks, ranges, wildlife sanctuaries, and flood control.³⁶³

Even in the brief era when the Court freely applied external limits, since repudiated, to restrict broad congressional power in selecting tax and commerce measures necessary and proper to promote social welfare goals, it refused to discover limits in the constitutional statements of purpose.³⁶⁴

C. *Limits Derived from Constitutional Nomenclature*

Although the Supreme Court has declined to derive implied limits on federal authority from article I, section 8 statements of purpose, a semantic or taxonomic approach was employed in the early decades of this century to fashion internal limits on the enumerated powers. According to this approach, congressional power was narrowed by restrictive judicial definition of the terms granting enumerated powers. The reach of federal power depended not on policy considerations, such as whether unforeseen exigencies arising in "the crises of human affairs"³⁶⁵ required the exercise of commensurate powers to preserve "the happiness and prosperity of the nation,"³⁶⁶ but rather on whether the activity regulated was beyond the often procrustean definition supplied by judicial exegesis. Determination of the scope of federal powers threatened to devolve into little more

361. *Id.*

362. U.S. CONST. art. I, § 8, cl. 17.

363. See *Collins v. Yosemite Park & Curry Co.*, 304 U.S. 518, 529-30 (1938).

364. Professor Tribe considers that the development of admiralty law illustrates in microcosm the decline of the Court's willingness to find implied restrictions in grants of power. See *TRIBE*, *supra* note 298, at 230 n.13.

365. *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 415 (1819).

366. *Id.* at 408.

than an ad hoc exercise in nomenclature or labelling, without substantive relation to the genuinely federal interest in regulating economic matters affecting more states than one, and beyond the control of any.

The rise and decline of such semantic limits is well-illustrated by judicial construction of the commerce power. Since *Gibbons v. Ogden*,³⁶⁷ the judiciary has labored to delineate the confines of the power conferred, by considering the terms "regulate," "commerce" and "among the several States." Chief Justice Marshall adopted a broad definition of these terms in *Gibbons*, directly rejecting the suggestion that "commerce" was limited to "buying and selling, or the interchange of commodities," thus by definition excluding navigation.³⁶⁸ The power granted to "regulate" was interpreted in a similarly comprehensive manner, as the "plenary" power to prescribe the rule by which commerce is to be governed.³⁶⁹ The critical phrase "among the several States" was construed expansively, although in somewhat less definite terms. While any intrastate activity "affecting" other states could be the subject of regulation by Congress, a residual sphere of purely intrastate activity preserved from federal regulation was also posited.³⁷⁰ Chief Justice Marshall thus declined to limit the commerce clause by confining its terms within any static definition. Instead, he adopted a pragmatic and flexible test for determining whether an activity conducted within a state "affects" the commerce of other states, and for this reason properly falls within the sphere of national regulatory authority.

In the absence of significant nineteenth-century commerce clause regulation clearly extending beyond interstate transportation,³⁷¹ the broad definition applied by Chief Justice Marshall was generally followed by the Court in upholding federal power to regulate such aspects of interstate commerce as maintaining the navigability of rivers,³⁷² licensing ships on intrastate waters carrying goods in the flow of interstate commerce,³⁷³ and intrastate telegraph com-

367. 22 U.S. (9 Wheat.) 1 (1824).

368. *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 189-90 (1824).

369. *Id.* at 196-97.

370. *Id.* at 194-95.

371. The era of modern federal economic regulation began with the Interstate Commerce Act of 1887, ch. 104, 24 Stat. 379 (current version at 49 U.S.C. §§ 1-11917) and the Sherman Antitrust Act of 1890, ch. 647, 26 Stat. 209 (current version at 15 U.S.C. §§ 1-5 (Supp. III 1985)).

372. See *Pennsylvania v. Wheeling & Belmont Bridge Co.*, 59 U.S. (18 How.) 421 (1856).

373. See *The Daniel Ball*, 77 U.S. (10 Wall.) 557, 565 (1871).

munications.³⁷⁴ Congress was accorded discretion in determining whether intrastate activities affected interstate commerce, particularly in regulation of the monopolistic railroad industry, and the Court sustained federal requirements for safety equipment on railroads operating intrastate,³⁷⁵ regulation of intrastate rates,³⁷⁶ and maximum hour provisions for railroad workers.³⁷⁷

The era of judicial deference came to an end with the enactment of general economic measures extending beyond the regulation of the flow of goods in interstate commerce.³⁷⁸ In *United States v. E. C. Knight Co.*,³⁷⁹ the Court construed the Sherman Act by referencing the commerce clause, applying a narrowing definition of commerce that excluded manufacturing. "Commerce," the Court declared, "succeeds to manufacture, and is not a part of it."³⁸⁰ In selecting a restrictive and formalistic definition, rather than inquiring whether the monopolization of the United States sugar industry would be conduct that would "extend to or affect other States,"³⁸¹ the Court departed from the functional inquiry required by *Gibbons*.³⁸² This foreshadowed a judicial willingness to find implied semantic limitations on the legislative economic powers that characterized the fol-

374. See *Western Union Tel. Co. v. Pendleton*, 122 U.S. 347 (1887); cf. *Pensacola Tel. Co. v. Western Union Tel. Co.*, 96 U.S. 1 (1878) (state cannot grant a monopoly on intrastate telegraph service).

375. See *Southern Ry. v. United States*, 222 U.S. 20, 26 (1911).

376. See *Houston, E. & W. Texas Ry. v. United States*, 234 U.S. 342 (1914) ("Shreveport Rate Case").

377. See *Baltimore & Ohio R.R. v. ICC*, 221 U.S. 612 (1911).

378. There is a lack of agreement as to when the era of judicial retrenchment from *Gibbons* commenced. Charles Black considers that the "picture was until 1918 completely consistent" and that until then the "cases seemed to say with one voice that Congress might make access to interstate commerce conditional on any factors it liked." BLACK, *supra* note 295, at 25. However, according to Archibald Cox, the restrictive interpretation of the commerce power dates from the Civil War. Cox, *The Role of Congress in Constitutional Determinations*, 40 U. CIN. L. REV. 199, 224 (1971) [hereinafter Cox]. Professor Tribe concludes that beginning in 1887 the Court was required to judge the limits of congressional power and that the view of the commerce clause that developed contrasted sharply with the approach in *Gibbons*. Tribe, *supra* note 298, at 234. The conclusion reached by Professor Tribe is the view adopted by the Supreme Court in *Wickard v. Filburn*, 317 U.S. 111, 121-22 (1942).

379. 156 U.S. 1 (1895). The government sued to prevent the American Sugar Company from acquiring four Pennsylvania sugar refining companies in order to obtain control of ninety-eight percent of the sugar refining capacity of the United States. *Id.* at 3.

380. *Id.* at 12. The Court further indicated that the "fact that an article is manufactured for export to another State does not of itself make it an article of interstate commerce." *Id.* at 13.

381. *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 194 (1824).

382. See *United States v. E. C. Knight Co.*, 156 U.S. 1, 19 (1895) (Harlan, J., dissenting); see also *Carter v. Carter Coal Co.*, 298 U.S. 238, 332 (1936) (Cardozo, J., dissenting).

lowing forty years.³⁸³

During this period, and particularly after *Hammer v. Dagenhart*,³⁸⁴ the Court repeatedly invalidated federal legislation as exceeding its self-imposed definitional limits on the term "commerce," under which production was considered prior to interstate commerce³⁸⁵ and intrastate distribution and sale were held to take place after interstate commerce had ceased.³⁸⁶ Judicial manipulation of constitutional nomenclature reached its fullest height in *Carter v. Carter Coal Co.*,³⁸⁷ where the Court exempted broad aspects of production from federal commerce power regulation with the explanation:

We have seen that the word "commerce" is the equivalent of the phrase "intercourse for the purposes of trade." . . . The employment of men, the fixing of their wages, hours of labor and working conditions, the bargaining in respect of these things—whether carried on separately or collectively—each and all constitute intercourse for the purposes of production, not of trade. The latter is a thing apart from the relation of employer and employee, which in all producing occupations is purely local in character.³⁸⁸

This hair-splitting judicial exercise in semantics had its counterpart under the taxation clause, where the distinction between a "tax" and a "penalty" was applied to restrict the exercise of the taxing power to ends approved by the Court.³⁸⁹

Clearly driven by the judicial conviction that the Constitution reserved large areas of economic and labor regulation immune from

383. The restriction announced in *Knight* did not prove fatal to enforcement of the Sherman Act. Since *Knight* was subsequently distinguished on its facts as involving only the intrastate purchase of manufacturing facilities, the Act was repeatedly held applicable to interstate markets and regulation of the "current of commerce among the states." See, e.g., *Loewe v. Lawlor*, 208 U.S. 274, 297 (1908); *Swift & Co. v. United States*, 196 U.S. 375, 397-99 (1905); *Northern Sec. Co. v. United States*, 193 U.S. 197, 329 (1904); *Addyston Pipe & Steel Co. v. United States*, 175 U.S. 211, 238-40 (1899).

384. 247 U.S. 251 (1918).

385. *Id.* at 272 (1918) (furniture manufacture); *Carter*, 298 U.S. at 309 (mining); cf. *Butler*, 297 U.S. at 1 (agriculture); *Champlin Ref. Co. v. Corporation Comm'n*, 286 U.S. 210, 235 (1932) (oil production).

386. See *Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935).

387. 298 U.S. 238 (1936).

388. *Id.* at 303.

389. See *Bailey v. Drexel Furniture Co.*, 259 U.S. 20, 38 (1922). Cf. *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, 540-45 (1985) (distinction between "proprietary" and "governmental" activities employed in tax immunity cases later abandoned because of its uncertainty and instability).

government interference,³⁹⁰ the static and narrowing definition of commerce propounded by the Court enabled it to interpose its judgment on the wisdom of congressional policy decisions, which were regarded as displacing state prerogatives.³⁹¹ It is often suggested that the semantic distinctions that had been applied, such as the judicial splitting of economic activity into commerce and manufacture, and the subsidiary criterion of direct versus indirect effect on interstate commerce,³⁹² were abandoned because they proved unworkable, either to provide explanation in a given case, or guidance in future decisions.³⁹³ The poverty of nomenclature-based analysis³⁹⁴ in providing a workable definition of the enumerated powers is evident from the endeavor in *Carter v. Carter Coal Co.*³⁹⁵ to clarify the "fundamental" distinction between direct and indirect effects of intrastate transactions upon interstate commerce:

390. The structural limitation of reserved state police power was cited in *United States v. De Witt*, 76 U.S. (9 Wall.) 41, 45 (1869). *DeWitt* was the first case to hold legislation under the commerce power unconstitutional. Interference with states' powers of economic regulation has been the most frequently cited reason for invalidation of commerce power legislation. See *National League of Cities v. Usery*, 426 U.S. 833 (1976); *Carter v. Carter Coal Co.*, 298 U.S. 238, 299-304, 308 (1936); *Schechter Poultry Corp.*, 295 U.S. at 546; *Hammer*, 247 U.S. at 273-76; *Howard v. Illinois Cent. R.R.*, 207 U.S. 463, 502 (1908) ("Employers' Liability Cases"); *In re Heff*, 197 U.S. 488, 505 (1905). The concept that the states retain a necessary sphere of police power regulation immune from federal control was the mainspring driving the semantic distinctions between "interstate commerce" and such "purely local" activities as manufacturing, mining, and agricultural production. See *United States v. E. C. Knight Co.*, 156 U.S. 1, 13, 16 (1895). A similar external limitation was applied to restrict the federal taxing power. See *United States v. Butler*, 297 U.S. 1, 68, 72 (1936); *Keller v. United States*, 213 U.S. 138, 144 (1909).

391. The professed solicitude of the Court for reserved state powers was undermined by its readiness to strike down state laws regulating labor and economic matters as violating substantive due process. See *Tyson v. Banton*, 273 U.S. 418 (1927); *Adkins v. Children's Hosp.*, 261 U.S. 525 (1923); *Truax v. Corrigan*, 257 U.S. 312 (1921); *Coppage v. Kansas*, 236 U.S. 1 (1915); *Lochner v. New York*, 198 U.S. 45 (1905); *Allgeyer v. Louisiana*, 165 U.S. 578 (1897); cf. *Adair v. United States*, 208 U.S. 161 (1908); *Railroad Retirement Bd. v. Alton R.R.*, 295 U.S. 330, 368 (1935) (invalidating federal legislation). The era of freewheeling federal review of state economic legislation ended with the approval of state minimum wage legislation in *West Coast Hotel Co. v. Parrish*, 300 U.S. 379 (1937).

392. See *Schechter Poultry Corp.*, 295 U.S. at 546.

393. Application of these tests has been criticized as an exercise that "rapidly collapsed into a series of judicial ipse dixits which provided neither explanation for the decision in a given case nor guidance for the future." Note, *On Reading and Using the Tenth Amendment*, 93 YALE L.J. 723, 729 n.37 (1984). See also Cox, *supra* note 378, at 225. Compare *Garcia*, 469 U.S. at 530-31, 539, 540-43 ("traditional government function test" is unworkable and fails to provide an organizing principle that distinguishes between similar fact situations).

394. See *Garcia*, 469 U.S. at 542 (former distinction between "governmental" and "proprietary" functions abandoned as "untenable" constitutional distinction in tax immunity cases).

395. 298 U.S. 238 (1936).

The word "direct" implies that the activity or condition invoked or blamed shall operate proximately—not medially, remotely, or collaterally—to produce the effect. It connotes the absence of an efficient intervening agency or condition. And the extent of the effect bears no logical relation to its character. The distinction between a direct and an indirect effect turns, not upon the magnitude of either the cause or the effect, but entirely upon the manner in which the effect has been brought about. . . . [T]he matter of degree has no bearing upon the question here, since that question is not—What is the *extent* of the local activity or condition, or the *extent* of the effect produced upon interstate commerce? but—What is the *relation* between the activity or condition and the effect?³⁹⁶

This fundamental distinction, "essential to the maintenance of our constitutional system,"³⁹⁷ but understandable, if at all, only by reference to metaphysics, epitomizes the shortcomings that infected the judiciary's attempt to justify the often inconsistent constitutional restrictions imposed by parsing constitutional nomenclature.³⁹⁸ This distinction was soon abandoned³⁹⁹ in favor of Justice Holmes' rule that "commerce among the States is not a technical legal conception, but a practical one, drawn from the course of business."⁴⁰⁰

With its landmark decision in *NLRB v. Jones & Laughlin Steel Corp.*,⁴⁰¹ upholding federal power to regulate manufacture by preventing unfair labor practices affecting commerce, the Supreme Court shattered the basis on which its previous restrictive decisions had stood,⁴⁰² and abandoned the internal semantic distinction between commerce and manufacturing as a definitional limit to the commerce power.⁴⁰³ In returning to the principles of *Gibbons*,⁴⁰⁴ the

396. *Id.* at 307-08 (emphasis added).

397. *Id.* (quoting *Schechter Poultry Corp.*, 295 U.S. at 548).

398. For judicial criticism of the unworkable distinction fashioned by the Court between unconstitutional minimum wage legislation and permissible maximum hour provisions, see *West Coast Hotel Co. v. Parrish*, 300 U.S. 379, 395-96 (1937) and Justice Taft's dissenting opinion in *Adkins v. Children's Hospital*, 261 U.S. 525, 564 (1923).

399. See *United States v. Darby*, 312 U.S. 100, 123 (1941); *Wickard v. Filburn*, 317 U.S. 111, 122-23 (1942).

400. *Swift & Co. v. United States*, 196 U.S. 375, 398 (1905).

401. 301 U.S. 1 (1937).

402. The existence of a limitation on the federal commerce power from the reserved police powers of the states had been denied in *Seven Cases v. United States*, 239 U.S. 510, 514-15 (1916), and was repudiated in *United States v. Carolene Prods. Co.*, 304 U.S. 144, 147 (1938) and *Darby*, 312 U.S. at 114.

403. 301 U.S. at 40 (fact that employees were involved in production not determinative of federal commerce power). The remaining bulwarks against federal economic legislation collapsed with *Darby*, 312 U.S. 100 (sustaining federal minimum wage and hour legislation;

Court repudiated its practice of decision by labelling,⁴⁰⁵ with the observation that "questions of the power of Congress are not to be decided by reference to any formula which would give controlling force to nomenclature such as 'production' and 'indirect' and foreclose consideration of the actual effects of the activity in question upon interstate commerce."⁴⁰⁶ By changing the focus of the judicial inquiry from grammar to policy,⁴⁰⁷ the Court repudiated the concept that narrow limits can be deduced from constitutional nomenclature, returning to the reasoning of Justice Story in *Martin v. Hunter's Lessee*.⁴⁰⁸

The constitution unavoidably deals in general language. . . . It could not be foreseen, what new changes and modifications of power might be indispensable to effectuate the general objects of the charter; and restrictions and specifications, which at the present, might seem salutary, might, in the end, prove the overthrow of the system itself. Hence, its powers are expressed in general terms, leaving to the legislature, from time to time, to adopt its own means to effectuate legitimate objects, and to mould and model the exercise of its powers, as its own wisdom, and the public interests, should require.⁴⁰⁹

The Court also redefined the respective constitutional competencies of the legislative and judicial branches.⁴¹⁰ By renouncing the judicial role as a "super-legislature," competent to substitute its own

overruling *Hammer v. Dagenhart*, 247 U.S. 251 (1918) (312 U.S. 116-17); and limiting *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936) (312 U.S. at 123)); *United States v. Wrightwood Dairy Co.*, 315 U.S. 110 (1942) (sustaining federal price regulation of milk in intrastate commerce); and *Wickard*, 317 U.S. at 120 (sustaining federal regulation of agricultural production).

404. See *Wickard*, 317 U.S. at 122.

405. *Id.* at 122-23 (acknowledging that in some cases "the term 'direct' had been used for the purpose of stating, rather than of reaching, a result"). Cf. *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, 543 (1985) (earlier attempts to explain distinction between "governmental" and "proprietary" functions "sound more of ipse dixit than of reasoned explanation").

406. *Wickard*, 317 U.S. at 120; see also *id.* at 124.

407. See BLACK, *supra* note 295, 23.

408. 14 U.S. (1 Wheat.) 304 (1816).

409. *Id.* at 326-27.

410. See *Wickard v. Filburn*, 317 U.S. at 129, where the Court further stated:

The conflicts of economic interest between the regulated and those who advantage by it are wisely left under our system to resolution by the Congress under its more flexible and responsible legislative process. Such conflicts rarely lend themselves to judicial determination. And with the wisdom, workability, or fairness, of the plan of regulation we have nothing to do.

(citing *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 413-15, 435-36 (1819), and *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 197 (1824)).

conclusion as to the wisdom or necessity of economic legislation⁴¹¹ under the guise of enforcing an internal limit imposed by judicial definition, the Court has effectively removed both internal and structural limits upon the commerce power and left Congress solely accountable to the electorate for its exercise.⁴¹²

D. *The Proposed Constitutional Limitation on the Patent Power*

The suggestion in *Graham*⁴¹³ that a limitation on congressional power under the intellectual property clause may be derived from its statement of purpose "to promote the progress of . . . useful arts,"⁴¹⁴ is without counterpart in construction of the other article I, section 8 powers and departs without explanation from the fundamental and opposite rule followed since *McCulloch v. Maryland*.⁴¹⁵ Since *McCulloch*, the Court consistently has denied that statements of purpose in conjunction with grants of legislative power impose limitations on their exercise. It has done so in order to avoid restricting the enumerated constitutional powers to a scope narrower than that required by the federal government to meet unforeseen circumstances.⁴¹⁶ This great first principle of construction governs interpretation of the plenary intellectual property power as well,⁴¹⁷ and the

411. See *Williamson v. Lee Optical Co.*, 348 U.S. 483 (1955). The Court stated: The day is gone when this Court uses the Due Process Clause of the Fourteenth Amendment to strike down state laws, regulatory of business and industrial conditions, because they may be unwise, improvident, or out of harmony with a particular school of thought.

Id. at 488.

412. See *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, 551-55 (1985); *Northern Sec. Co. v. United States*, 193 U.S. 197, 350-51 (1904). See generally Wechsler, *The Political Safeguards of Federalism: The Role of the States in the Composition and Selection of the National Government*, 54 COLUM. L. REV. 543 (1954); TRIBE, *supra* note 298, at 242-43; Cox, *supra* note 378, at 200, 246.

413. 383 U.S. at 1.

414. *Id.* at 5-6.

415. 17 U.S. (4 Wheat.) 316 (1819).

416. See *supra* notes 316-19 and accompanying text. As Charles Black forcibly has argued:

A federal government must be given powers broadly expressed and hence susceptible of great expansion; if this is not done, the federal government will not be a workable structure, adequate to meet emergent need. Our national commerce and taxing powers are typical; neither text nor context will bear restrictive interpretation.

BLACK, *supra* note 295, at 28.

417. See, e.g., *Mitchell Bros. Film Group v. Cinema Adult Theater*, 604 F.2d 852 (5th Cir. 1979), *cert. denied*, 445 U.S. 917 (1980). In *Mitchell Bros.*, the Court stated:

Congress has authority to make any law that is "necessary and proper" for the execution of its enumerated Article I powers . . . including its copyright power,

contrary suggestion in *Graham* is supported neither by history nor public policy considerations.

The second implication of the *Graham* constitutional dictum, that the judiciary has the primary authority to determine whether a patentability standard "promotes the progress of . . . useful arts," is an anachronism redolent of *Lochner v. New York*⁴¹⁸ and *Hammer v. Dagenhart*.⁴¹⁹ The essential question with respect to the statutory standard of patentability is not whether the useful arts shall be promoted, but what branch of the federal government is constitutionally responsible for selecting the policy most suitable for carrying into effect the enumerated power. From the standpoint of constitutional theory developed since *McCulloch*, the central fallacy of this approach⁴²⁰ is the assumption that if a constitutional limitation is in fact expressed by the intellectual property clause statement of policy, the Supreme Court is vested with constitutional authority to substitute its judgment of whether a policy promotes the constitutional purpose for that of Congress. The absence of any consideration of the respective competencies of the judicial and legislative branches renders the "implied limitation" construction of the intellectual property clause anomalous in an era of judicial deference to the particular institutional abilities of the legislative branch when weighing the practical consequences of alternative policy choices to advance general constitutional goals.⁴²¹

To cite a single example in the taxing power, it is inconceivable since *Steward Machine Co. v. Davis*⁴²² that a tax would be struck down by the Supreme Court on the basis that the taxation clause affirmatively "requires that taxes advance the general welfare" or that the statement of purpose establishes a "constitutional standard" that permits review of tax measures based on the Court's impression

and the courts['] role in judging whether Congress has exceeded its Article I powers is limited. The courts will not find that Congress has exceeded its power so long as the means adopted by Congress for achieving a constitutional end are "appropriate" and "plainly adapted" to achieving that end. *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 421 (1891). It is by the lenient standard of *McCulloch* that we must judge whether Congress has exceeded its constitutional powers in enacting an all-inclusive copyright statute.

Id. at 860 (citations omitted). *Accord* *Schnapper v. Foley*, 667 F.2d 102, 111 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 948 (1982).

418. 198 U.S. 45 (1905).

419. 247 U.S. 251 (1918).

420. The approach was advocated by Justice Douglas in *Special Equip. Co. v. Coe*, 324 U.S. 370, 383-84 (1945) (Douglas, J., dissenting).

421. See *infra* notes 438-41 and accompanying text.

422. 301 U.S. 548 (1937).

of whether the welfare of the nation would be advanced or retarded.⁴²³ The approach suggested in *Graham*, by which the judiciary may interpose its independent assessment of whether a patentability standard will promote the progress of useful arts, is equally inconsistent both with precedent and the pragmatic policy requiring deference to Congress in determining the measures that are necessary and proper to carry into effect the enumerated powers.

In distinction to the limitation inferred from the statement of purpose, the Supreme Court in *Graham* does not suggest that the nomenclature of the intellectual property clause imposes a minimum patentability requirement by specifying that Congress shall have power to secure to "inventors" exclusive rights in their "discoveries." While the constitutional bifurcation between "writings" and "discoveries"⁴²⁴ may impose a structural limit on the intellectual property power,⁴²⁵ contemporary constitutional theory provides no support for the suggestion⁴²⁶ that new and restrictive definitions of constitutional terms such as "science," "author" or "inventor" may be coined by the judiciary to limit congressional power under the intellectual property clause. The drafters of the intellectual property clause avoided use of the familiar terms "copyright" and "patent" with the evident intention of avoiding restriction of the constitutional terms to the established eighteenth-century forms of intellectual property,⁴²⁷ and there is no warrant in constitutional law for substituting a narrow meaning for the necessarily general terms provided by the Framers.⁴²⁸

423. The judicial interpretation of the power granted by U.S. CONST. art. I, § 8, cl. 1 to impose taxes and pay debts to "provide for the common defence and general welfare of the United States" has treated the term "provide for" as synonymous with "to promote" as used in the intellectual property clause. See *Buckley v. Valeo*, 424 U.S. 1, 90 (1976); *United States v. Gerlach Live Stock Co.*, 339 U.S. 725, 738 (1950); *Steward Mach. Co. v. Davis*, 301 U.S. 548, 587 (1937); *United States v. Butler*, 297 U.S. 1, 67 (1936). The constitutional term "to promote" is similarly general, having been equated with the words "to stimulate," "to encourage," or "to induce." *Goldstein v. California*, 412 U.S. 546, 555 (1973).

424. See *supra* note 96.

425. See *supra* notes 188-95 and accompanying text.

426. See cases cited *supra* note 260.

427. See Fenning, *supra* note 96, at 445. By contrast, the existing drafts of proposals for the Constitution frequently refer to "patents" and "copyrights." Fenning, *supra* note 96, at 441-42.

428. See *supra* notes 404-09 and accompanying text. Much of the discussion regarding a constitutional threshold standard of patentability has involved debate over the meaning assigned to the terms "science" and "inventor" at the time of the adoption of the Constitution. See Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 394-97 (1960); Seidel, *The Constitution and a Standard of Patentability*, 48 J. PAT. OFF. SOC'Y 5, 9-17 (1966); Irons & Sears, *The Constitutional Standard of Invention—The Touchstone for Patent Reform*, 1973

The vagaries inherent in a judicial labelling approach are indicated by the divergent statutory interpretations of the two basic terms of intellectual property law. The scope of "writings" has continuously been expanded by Congress and followed by the judiciary.⁴²⁹ During the nineteenth century, the judicial definition of "invention" followed an opposite course, progressively restricting the term in its statutory context from a synonym for novelty (i.e., something not known or used before),⁴³⁰ to a discovery requiring the exercise of skill beyond that possessed by the ordinary artisan.⁴³¹

Although limited to a statutory context, the divergent interpretations of intellectual property nomenclature demonstrate the practical shortcomings of interpretations based on semantic, rather than policy, considerations.⁴³² In the patent sphere, as in other article I, section 8 contexts, reliance on a static formula that gives controlling weight to judges' subjective definitions of nomenclature⁴³³ such as

UTAH L. REV. 653.

429. See *supra* notes 145-65 and accompanying text.

430. See, e.g., *McCormick v. Seymour*, 15 F. Cas. 1322 (C.C.N.D.N.Y. 1851) (No. 8,726), *rev'd on other grounds*, 57 U.S. (16 How.) 480 (1854); *Washburn v. Gould*, 29 F. Cas. 312 (C.C.D. Mass. 1844) (No. 17,214); *Wyeth v. Stone*, 30 F. Cas. 723 (C.C.D. Mass. 1840) (No. 18,107); *Ryan v. Goodwin*, 21 F. Cas. 110, 111 (C.C.D. Mass. 1839) (No. 12,186); *Earle v. Sawyer*, 8 F. Cas. 254, 255-56 (C.C.D. Mass. 1825) (No. 4,247); *Lowell v. Lewis*, 15 F. Cas. 1018, 1020 (C.C.D. Mass. 1817) (No. 8,568).

431. Despite the holding in *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851), it was only after the Civil War that the nonobviousness determination came to be regularly applied as a general condition of patentability. See, e.g., *Slawson v. Grand St. R.R.*, 107 U.S. 649 (1883); *Atlantic Works v. Brady*, 107 U.S. 192 (1883); *Pearce v. Mulford*, 102 U.S. 112, 118 (1880); *Dunbar v. Myers*, 94 U.S. 187, 197 (1876); *Reckendorfer v. Faber*, 92 U.S. 347, 356 (1876); *Union Paper Collar Co. v. Van Dusen*, 90 U.S. (23 Wall.) 530, 562 (1875); *Hailes v. Van Wormer*, 87 U.S. (20 Wall.) 353, 368, 374 (1874); *Stimpson v. Woodman*, 77 U.S. (10 Wall.) 117, 121 (1870).

432. The "patentable invention" standard created by the judiciary proved incapable of explaining the decision in a case at issue, or of providing a workable standard for future judicial application. In the view of an eminent patent judge, the judicially-fashioned requirement for "invention" "became the plaything of the judiciary and many judges delighted in devising and expounding their own ideas of what it meant. This kind of mystical reasoning left the judiciary free to indulge their personal whims about patentability." Rich, *Laying the Ghost of the 'Invention' Requirement*, 1 AM. PAT. L.A.Q.J. 26, 31 (1972). Radical shifts in judicial opinion left patent law with "no more stability than quicksand." *Id.* at n.7. Judge Learned Hand similarly criticized judicial inconsistency in applying the standard, stating:

You could find nearly anything you liked if you went to the opinions. It was a subject on which judges loved to be rhetorical. . . . [P]atent lawyers . . . like to quote all those things. There are lots of them. . . . They never seemed to tend toward enlightenment.

Id. at n.5 (quoting Judge Hand's testimony in Hearings Pursuant to S. Res. 92, 84th Cong., 1st Sess. 113 (1955)).

433. It is ironic that Justice Black failed to appreciate that the "accordion-like" expansion and contraction of constitutional terms by judicial definition and redefinition is as undesir-

"inventor" and "author" could destroy the enumerated power, by depriving the legislature of its constitutional "capacity to avail itself of experience, to exercise its reason, and to accommodate its legislation to circumstances."⁴³⁴

With respect to the intellectual property power, as well as the other economic powers, pragmatic considerations along with the constitutional structure defined in *Gibbons*⁴³⁵ and *McCulloch*⁴³⁶ require that the primary responsibility for determining which laws and policies are necessary to carry out the enumerated powers belongs to Congress, and that judicial review is properly limited to the question of whether the means selected by Congress have a rational relationship to the constitutional purpose.⁴³⁷

E. Congress' Rational Basis for Enactment of the Chip Act

Judicial deference to the legislature in determining the measures necessary and proper to carry into effect the economic powers is the result of a realistic appraisal of the institutional abilities of Congress. The Legislature is now acknowledged to be constitutionally vested with the responsibility to make policy decisions in carrying the enumerated powers into effect,⁴³⁸ because of its superior factfinding ability,⁴³⁹ its accountability in the electoral process,⁴⁴⁰

able in the article I, section 8 context, as it is in the others. See *Rochin v. California*, 342 U.S. 165, 177 (1952) (Black, J., concurring). Compare his remark that the due process clause is not "a blank sheet of paper" left by the Framers for modern judges to inscribe their personal notions "in accordance with their ideas of civilization's demands." *West Virginia Bd. of Educ. v. Barnette*, 319 U.S. 624, 643 (1943) (Black, J., concurring).

434. *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 415 (1824).

435. *Id.*

436. *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316 (1819).

437. See *United States v. Carolene Prods. Co.*, 304 U.S. 144, 152 (1938) (*quoted supra* note 220); *Heart of Atlanta Motel v. United States*, 379 U.S. 241, 258-59 (1964). In determining the constitutionality of Title II of the Civil Rights Act of 1964, 42 U.S.C. § 2000a (1982), prohibiting racial discrimination in public accommodations under the commerce power, the Court indicated that "[t]he only questions are: (1) whether Congress had a rational basis for finding that racial discrimination by motels affected commerce, and (2) if it had such a basis, whether the means it selected to eliminate that evil are reasonable and appropriate." *Id.* at 258; *accord Reid v. Covert*, 354 U.S. 1, 70 (1957) (Harlan, J., concurring); *Solorio v. United States*, 107 S. Ct. 2924, 2931 (1987).

438. See *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 547-55 (1985); *Sony Corp. v. Universal City Studios*, 464 U.S. 417, 429, 431 (1984).

439. This view has been developed at length by Archibald Cox, who concluded that the legislature is a better factfinding body than an appellate court because of the greater number of members, having a wider background and a more intimate knowledge of current social and economic conditions, and the ability of legislative committees to develop the background facts necessary for policy determinations in investigative proceedings. See Cox, *supra* note 378, at 209; Cox, *Foreword: Constitutional Adjudication and the Promotion of Human Rights*, 80

and its function of (at least to some extent) independently interpreting the constitutional terms.⁴⁴¹ The importance of legislative factfinding competency to Congress' primary constitutional role in implementing the enumerated powers is underscored by the Chip Act, where clear legislative articulation of the requirements of the semiconductor industry provides a factual foundation for discussion of the constitutional issues. Evidence presented in the hearings on semiconductor protection legislation supports legislative determinations that chips and mask works are purely utilitarian articles;⁴⁴² that their design is increasingly labor-intensive and costly with each succeeding chip generation;⁴⁴³ that design developments are generally obvious to one of ordinary skill in the art;⁴⁴⁴ that a period of exclusivity is necessary to permit recovery of development costs;⁴⁴⁵ and that the widespread practice of photographic copying has reduced the period of exclusivity to far less than normal development time;⁴⁴⁶ thus preventing or threatening to prevent recovery of development costs and inhibiting investment necessary for development of more advanced chips.⁴⁴⁷

Based on these factual determinations, Congress considered and balanced a number of competing policy issues in fashioning a sui generis standard for mask works. These issues include the effect of delay in obtaining exclusive rights, in view of the rapid development and corresponding obsolescence of chip designs;⁴⁴⁸ the time period

HARV. L. REV. 91, 107 (1966). Justice Brennan adopted the view that "[t]he nature of the judicial process makes it an inappropriate forum for the determination of complex factual questions of the kind so often involved in constitutional adjudication . . ." in *Oregon v. Mitchell*, 400 U.S. 112, 247-48 (1970) (dissenting in part).

440. See *Garcia*, 469 U.S. at 550-54.

441. See *Katzenbach v. Morgan*, 384 U.S. 641 (1966) (holding that Congress has power to determine that a state's English literacy voting requirement violates the fourteenth amendment, even though the Supreme Court would have sustained the same law). See also *Cox*, *supra* note 378, at 224-39; *United States v. Butler*, 297 U.S. 1, 87-88 (1936) (Stone, J., dissenting).

442. See *supra* notes 11, 41, 185-86 and accompanying text; House Report, *supra* note 9, at 3-4, 6, 8-10; Senate Report, *supra* note 9, at 6.

443. See *supra* notes 13-18 and accompanying text; Senate Report, *supra* note 9, at 5; House Report, *supra* note 9, at 12.

444. See *supra* note 46 and accompanying text; Senate Report, *supra* note 9, at 8; House Report, *supra* note 9, at 3.

445. See *supra* note 22 and accompanying text; Senate Report, *supra* note 9, at 5-6; House Report, *supra* note 9, at 2.

446. See *supra* note 16, 19-20 and accompanying text; House Report, *supra* note 9, at 2-3; Senate Report, *supra* note 9, at 5.

447. See *supra* notes 17 and 22 and accompanying text; House Report, *supra* note 9, at 3; Senate Report, *supra* note 9, at 5-6.

448. See Senate Report, *supra* note 9, at 8-9; House Report, *supra* note 9, at 25.

necessary to permit recovery of development costs without stifling innovation;⁴⁴⁹ the scope of the exclusive right conferred (limited to reproduction, and not extending to use);⁴⁵⁰ and the competing interests in reverse engineering.⁴⁵¹ Of greatest importance for the present discussion is congressional consideration of the standard for protection, somewhat greater than copyright originality but clearly less than patent nonobviousness, upon which registrability of mask works is conditioned.⁴⁵²

Each of these factual and policy considerations is particularly suitable for legislative determination. The prolonged debate over the reverse engineering exception is illustrative.⁴⁵³ Opposition within the semiconductor industry to the original bill resulted in significant limitation of the scope of protection afforded by the Act, in particular, by the reverse engineering provision.⁴⁵⁴ This restriction ensures industry access to developments embodied in registered works and is conditioned only upon the method of reproduction employed. Such tailoring of individual provisions required to balance competing economic interests is beyond the self-acknowledged limitations of the judiciary.⁴⁵⁵ Based on similar considerations, it could not be declared judicially that a term of ten years, as opposed to five, seventeen or seventy-five years, would necessarily fail to promote the progress of an admittedly useful art.⁴⁵⁶ Neither could the grant of absolute rights, as opposed to those qualified by a reverse engineering exception, be imposed by the Court as an essential precondition of such progress. Determinations of time limits on protection and of the conduct that will be exempt from infringement are economic matters so clearly susceptible to a number of reasonable solutions that they are now left to the political branch most capable of resolving such is-

449. See Senate Report, *supra* note 9, at 22-23; 1983 House Hearings, *supra* note 9, at 74.

450. See Senate Report, *supra* note 9, at 20-21; House Report, *supra* note 9, at 21 n.40; 1983 House Hearings, *supra* note 9, at 72-73 (first sale limitation).

451. See Senate Report, *supra* note 9, at 21-22; House Report, *supra* note 9, at 21-22; House Explanatory Memorandum, *supra* note 24, at E4433.

452. See *supra* notes 58-63 and accompanying text.

453. See 1979 Hearing, *supra* note 9, at 51, 54, 57, 61, 69, 73, 75; 1983 House Hearings, *supra* note 9, at 16-17, 34, 68, 71, 115; 1983 Senate Hearing, *supra* note 9, at 75-77, 83, 84-85, 100-101, 103-104, 110, 114; Senate Report, *supra* note 9, at 21-22.

454. See *supra* note 32.

455. See, e.g., *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, 545 (1985); *Ferguson v. Skrupa*, 372 U.S. 726, 730-31, 732 (1963); *Wickard v. Filburn*, 317 U.S. 111, 129 (1942); *West Coast Hotel Co. v. Parrish*, 300 U.S. 379, 399 (1937); *Helvering v. Davis*, 301 U.S. 619, 640-41 (1937); *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 196-97 (1824); *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 415-16, 421 (1819).

456. See 1 M. NIMMER, *supra* note 51, 1.05[A] at 1-34.

sues,⁴⁵⁷ a point recently emphasized in *Sony Corp. v. Universal City Studios*.⁴⁵⁸

As the text of the Constitution makes plain, it is Congress that has been assigned the task of defining the scope of the limited monopoly that should be granted to authors or to inventors in order to give the public appropriate access to their work product. . . .

Sound policy, as well as history, supports our consistent deference to Congress when major technological innovations alter the market for copyrighted materials. Congress has the constitutional authority and the institutional ability to accommodate fully the varied permutations of competing interests that are inevitably implicated by such new technology.⁴⁵⁹

The same considerations apply to the standard of registrability. In weighing the countervailing interests of rival chip producers and the public interest in continued development of the United States semiconductor industry, Congress was first required to create a standard that would not be impossible to satisfy, i.e., which would demand only a degree of difference from the prior art attainable in the industry.⁴⁶⁰ The second criterion for a standard is that it not unduly restrict the public domain by permitting appropriation of substantially preexisting works.⁴⁶¹ In fashioning the Chip Act, Congress achieved these competing goals by simultaneously reducing the standard for registrability⁴⁶² and the scope of protection conferred.⁴⁶³ Chip registration is easy to obtain and enforce, but relatively toothless against any infringing activity except photocopying. The broad reverse engineering exception permits expropriation of any improvement or idea contained in a registered chip, so long as it can be shown that the facially infringing chip was not photocopied but was

457. See cases cited *supra* note 455; *Hodel v. Virginia Surface Mining Ass'n*, 452 U.S. 264, 276 (1981); *Williamson v. Lee Optical Co.*, 348 U.S. 483, 488-89 (1955); *Lindsley v. Natural Carbonic Gas Co.*, 220 U.S. 61, 78-79 (1911).

458. 464 U.S. 417 (1984).

459. *Id.* at 429-31. Compare *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), in which the Court stated, "[t]he direction of Art. I is that Congress shall have the power to promote the progress of science and the useful arts. When, as here, the Constitution is permissive, the sign of how far Congress has chosen to go can come only from Congress." *Id.* at 530; see also *Goldstein v. California*, 412 U.S. 546, 562 (1973) (whether any specific category of "writings" is to be protected by copyright "is left to the discretion of the Congress").

460. See *supra* note 46.

461. See House Report, *supra* note 9, at 19.

462. See *supra* notes 63 and 73 and accompanying text.

463. See *supra* notes 30-40 and accompanying text.

the result of "study or analysis,"⁴⁶⁴ thus providing the original developer with a decent interval to recover development costs in the market.⁴⁶⁵ If the basic requirement for progress in the semiconductor industry is a period of market exclusivity sufficient to recover development costs, the Chip Act is admirably tailored to secure this result. By restricting a competitor only to using essentially the same design methods in order to copy a chip design, the Act attains its objective with minimal restriction on the ideas available for free use by the public. It is important to note that the flexibility required to fashion such protection is denied to the legislative branch if the intellectual property power is hemmed either by a threshold requirement of non-obviousness, or by a minimum requirement of exclusivity.⁴⁶⁶ Judicial imposition of either absolute requirement would frustrate rather than promote the progress of the semiconductor art.

F. A Threshold Nonobviousness Standard Does Not Necessarily Promote the Progress of Useful Arts

Constitutionalization of the nonobviousness requirement is ill-advised on public policy grounds, since compelling public policy interests may support the existence of limited exclusive rights "to promote the progress of . . . useful arts" even when the particular non-obviousness requirement cannot be met. Accepting Congress' factual determinations, once research and development costs exceed the reasonable expectation of return in the marketplace, innovation in chips and the progress of an extremely useful art⁴⁶⁷ will cease.⁴⁶⁸ Although an inflexible threshold requirement of nonobviousness may promote the useful arts in many instances, it has no intrinsic or necessary relationship to the constitutional goal, since the promotion of very useful arts may depend on sufficient legal protection to ensure recov-

464. See House Report, *supra* note 9, at 22. A detailed analysis of the reverse engineering exception is beyond the scope of the present article. However, the congressional emphasis on the importance of a "paper trail" to the determination of legitimate reverse engineering as opposed to "piracy" indicates that the legislative concern was primarily with the method of copying employed, rather than the subject matter appropriated. See House Report, *supra* note 9, at 21-23; Senate Report, *supra* note 9, at 21-22.

465. See *supra* notes 21-22 and accompanying text.

466. See *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 423-24 (1908) (suggesting that the Constitution requires an absolute monopoly in the patent grant).

467. The world semiconductor market was estimated at 12.6 billion dollars annually in 1983, of which the United States controlled 67%. See 1983 House Hearings, *supra* note 9, at 65 (statement of G. Mossinghoff, Commissioner of Patents and Trademarks); cf. Senate Report, *supra* note 9, at 4 (16 billion dollar estimate).

468. See Senate Report, *supra* note 9, at 1, 5; House Report, *supra* note 9, at 2-3.

ery of development costs, even when the developments individually viewed may have been obvious to one of ordinary skill in the art.

In fashioning a constitutional patent policy that will genuinely promote the progress of useful arts, the Court should avoid incorporating into the Constitution particular rules of Patent Office procedure or other subtests useful in applying statutory standards. Of the four standards suggested by Jefferson,⁴⁶⁹ none has survived even as a statutory criterion. Combinations of old elements have always been patentable.⁴⁷⁰ Nonobvious new uses⁴⁷¹ and substitutions of material⁴⁷² are now patentable. Changes of form or proportion are no longer directly relevant patentability considerations.⁴⁷³ Constitution-izing any of these fossil requirements would have unnecessarily deprived the legislature of the ability to fashion a more comprehensive standard. The same is true of the current statutory criterion of non-obviousness, which may or may not ultimately prove to be a useful adjunct in fulfilling the important public policy expressed in the intellectual property clause.⁴⁷⁴

Both from the standpoint of consistency in constitutional theory, and to assure the preservation of federal power necessary to advance the useful arts, Congress should be free to determine the patentability standards necessary to promote the progress of useful arts, subject only to the requirements that its decision and standard bear a rational relationship to this end, and respect the structural limitations imposed by the division of copyright and patent powers within the clause.⁴⁷⁴

469. The "general rules" described by Jefferson as applied under the 1790 Act are summarized in *Graham*, 383 U.S. at 10 n.3. *But cf. Federico, Operation of the Patent Act of 1790*, 18 J. PAT. OFF. SOC'Y 237, 244 n.15 (1936).

470. The rule urged by Jefferson against patenting a combination of old elements was never applied by the courts. *See, e.g., Hovey v. Henry*, 12 F. Cas. 603, 604 (C.C.D. Mass. 1846) (No. 6,742); *Ryan v. Goodwin*, 21 F. Cas. 110, 111 (C.C.D. Mass. 1839) (No. 12,186); *Earle v. Sawyer*, 8 F. Cas. 254 (C.C.D. Mass. 1825) (No. 4,247); *Pennock v. Dialogue*, 19 F. Cas. 171, 173 (C.C.E.D. Penn. 1825) (No. 10,941), *aff'd*, 27 U.S. (2 Pet.) 1 (1829); *Lowell v. Lewis*, 15 F. Cas. 1018, 1020 (C.C.D. Mass. 1817) (No. 8,568).

471. 35 U.S.C. § 100(b) (1982) defines the term "process" as including "a new use of a known process, machine, manufacture, composition of matter, or material." *See Federico, Commentary on the New Patent Act*, 35 U.S.C.A. 1, 16-17 (1954); H.R. REP. NO. 1923, 82d Cong., 2d Sess. 17 (1952); *In re Waldbaum*, 457 F.2d 997, 1002-03 (C.C.P.A. 1972).

472. The holding in *Hotchkiss* was tempered in *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486 (1877), which found considerations of long-felt need and commercial success to be decisive in favor of patentability in the case of substituting a cheap, durable, and elastic material—vulcanized rubber—for gold plates earlier used in forming the plate and gums to which artificial teeth are attached. *Id.* at 495.

473. This criterion was abandoned in the Act of July 4, 1836, ch. 357, 5 Stat. 117.

474. *See supra* notes 188-95 and accompanying text.

V. CONCLUSION

If, as indicated in *Graham*,⁴⁷⁵ a minimum standard equivalent to nonobviousness is a constitutional requirement for legislation securing exclusive rights in a useful article, the Chip Act is unconstitutional for failing to require a commensurate standard in securing exclusive rights in mask works. However, repeated constitutional adjudication of the parallel and plenary article I, section 8 powers, as augmented by the necessary and proper clause, has established that limitations are not to be implied from the grants of enumerated powers, and that a clear limitation must be found elsewhere within the confines of the Constitution in order to limit the otherwise unrestricted discretion of Congress in determining the measures and policies necessary to carry the enumerated powers into effect. The limitation discovered in the statement of purpose of the intellectual property clause has no history in United States patent law, and is inconsistent with the fundamental principles which have governed construction of the other article I, section 8 economic powers. The long history of contradictory and refuted policies embraced by the patent acts indicates that neither the progress of the useful arts, nor the Constitution itself, is likely to be promoted by judicial restriction of the enumerated patent power, in an attempt to immortalize any personal or currently fashionable theory of the public interests served by protecting intellectual property.

475. 383 U.S. 1 (1966).

